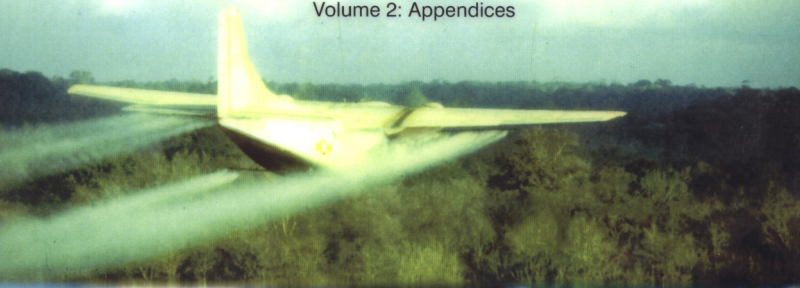


DEVELOPMENT OF IMPACT MITIGATION STRATEGIES RELATED TO THE USE OF AGENT ORANGE HERBICIDE IN THE ALUOI VALLEY, VIET NAM

Hatfield Consultants Ltd., West Vancouver, Canada
10-80 Committee, Ha Noi, Viet Nam

Volume 2: Appendices



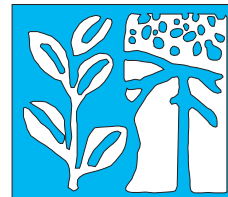
DEVELOPMENT OF IMPACT MITIGATION STRATEGIES RELATED TO THE USE OF AGENT ORANGE HERBICIDE IN THE ALUOI VALLEY, VIET NAM

VOLUME 2: APPENDICES

April 2000

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Suggested Citation for this Report:

Hatfield Consultants and 10-80 Committee. 2000.
Development of Impact Mitigation Strategies Related to the Use of Agent Orange
Herbicide in the Aluoi Valley, Viet Nam. Volume 1: Report; Volume 2: Appendices.
Hatfield Consultants Ltd., West Vancouver, BC, Canada;
10-80 Committee, Ha Noi, Viet Nam.

Front Cover Photos

- Top: C-123 applying herbicide over upland forest in Viet Nam. Photo courtesy of Dr. E.W. Pfeiffer, Missoula, Montana.
- Bottom: Elders and children living in the Aluoi Valley, Viet Nam (Hatfield Consultants Ltd. Photos, 1999).

Back Cover Photo

- Landslide along the road from Hue to the Aluoi Valley, Viet Nam, March 1999 (Hatfield Consultants Ltd. Photo).

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Cover design: L. Wayne Dwernychuk, Hatfield Consultants Ltd.
Printing: West Coast Reproduction Centres Ltd., Vancouver, BC

Canadian Cataloguing in Publication Data

Hatfield Consultants Limited

**Development of impact mitigation strategies related to the use of
agent orange herbicide in the Aluoi Valley, Viet Nam**

“April 2000”

Includes appendices on CD-ROM.

Includes bibliographical references.

ISBN 0-9680214-8-4

**1. Tetrachlorodibenzodioxin—Health aspects—Vietnam—Aluoi
Valley. 2. Tetrachlorodibenzodioxin—Environmental aspects—
Vietnam—Aluoi Valley. 3. Agent Orange—Toxicology—Vietnam—
Aluoi Valley. 4. Vietnamese Conflict, 1961-1975—Chemical warfare.
I. University of British Columbia. Dept. of Health Care and
Epidemiology. II. Vietnam. 10-80 Committee. III. Title.**

RA1242.T44H38 2000a

363.738'4

C00-900483-1

LIST OF APPENDICES

VOLUME 2

- Appendix A1 Summary of whole human blood and human breast milk collected in the Aluoi Valley, Viet Nam, June 1999
- Appendix A2 **AXYS ANALYTICAL SERVICES REPORT TO HATFIELD CONSULTANTS LTD**
February 2000
ANALYSIS OF POLYCHLORINATED DIOXINS AND FURANS FROM VIET NAM
- Technical Report
 - Introduction
 - Sample Handling
 - Analytical Methods
 - Analytical Results
 - Quality Assurance/Quality Control
 - Calculations
 - Detailed Analytical Methods
 - Section 1 Dioxin/Furan Analysis Reports: Soil
 - Section 2 Dioxin/Furan Analysis Reports: Plants and Animal Tissues
 - Section 3 Dioxin/Furan Analysis Reports: Human Breast Milk
 - Section 4 Dioxin/Furan Analysis Reports: Human Whole Blood
 - Section 5 Dioxin/Furan Analysis Reports: Vacutainer Proof
 - Section 6 PCB/Pesticide Analysis Reports: Human Breast Milk
 - Section 7 Particle Size Distribution (soil)
Total Organic Carbon (soil)

..2

- Section 8 Laboratory Quality Control: Sample Reports
 - ▶ Procedural Blanks
 - Soil (PCDD/PCDF)
 - Plant and Animal Tissues (PCDD/PCDF)
 - Milk (PCDD/PCDF)
 - Human Whole Blood (PCDD/PCDF)
 - Human Breast Milk (PCB/Pesticides)
 - ▶ Spiked Matrix
 - Soil (PCDD/PCDF)
 - Plant and Animal Tissues (PCDD/PCDF)
 - Milk (PCDD/PCDF)
 - Human Whole Blood (PCDD/PCDF)
 - Human Breast Milk (PCB/Pesticides)
- Section 9 Batch Summary Sheets.

Appendix A3 Forestry department prepared projects: Thua Thien Hue Province (Translation)

Appendix A1

**Summary of Whole Human Blood
and Human Breast Milk Collected
in the Aluoi Valley, Viet Nam,
June 1999**

Table A1.1 Samples of whole human blood collected from males >25 years of age; A So commune, Aluoi Valley, Viet Nam, June 10, 1999.

| Number | Patient ID Number | Age | Blood Volume (ml) |
|--------|-------------------|-----|-------------------|
| 1 | H226 | 57 | 2 |
| 2 | H227 | 60 | 3 |
| 3 | H228 | 70 | 2 |
| 4 | H229 | 75 | 2 |
| 5 | H230 | 28 | 1.5 |
| 6 | H231 | 46 | 2 |
| 7 | H232 | 54 | 2 |
| 8 | H233 | 62 | 2 |
| 9 | H234 | 72 | 2 |
| 10 | H235 | 57 | 3 |
| 11 | H236 | 57 | 2 |
| 12 | H237 | 57 | 2 |
| 13 | H238 | 79 | 1.5 |
| 14 | H239 | 25 | 2 |
| 15 | H240 | 49 | 2 |
| 16 | H241 | 72 | 2 |
| 17 | H244 | 57 | 2 |
| 18 | H245 | 61 | 2 |
| 19 | H246 | 45 | 2 |
| 20 | H247 | 55 | 2 |
| 21 | H278 | 25 | 2 |
| 22 | H282 | 25 | 2 |
| 23 | H301 | 72 | 2 |
| 24 | H302 | 52 | 2 |
| 25 | H303 | 59 | 2 |
| 26 | H304 | 49 | 3 |
| 27 | H306 | 28 | 2 |
| 28 | H307 | 64 | 2 |
| 29 | H308 | 35 | 2 |
| 30 | H309 | 50 | 2 |
| 31 | H310 | 39 | 2 |
| 32 | H311 | 30 | 2 |
| 33 | H312 | 62 | 2 |
| 34 | H323 | 29 | 2 |
| 35 | H324 | 39 | 2 |
| 36 | H325 | 29 | 2 |
| 37 | H326 | 34 | 2 |
| 38 | H328 | 46 | 1.5 |
| 39 | H329 | 42 | 2 |
| 40 | H332 | 27 | 2 |
| 41 | H334 | 38 | 2 |
| 42 | H336 | 51 | 2 |
| 43 | H337 | 27 | 2 |
| 44 | H340 | 52 | 2 |
| 45 | H341 | 35 | 2 |
| 46 | H342 | 45 | 2 |
| 47 | H343 | 25 | 2 |
| 48 | H350 | 60 | 2 |

Table A1.2 Samples of whole human blood collected from males <25 years of age; A So commune, Aluoi Valley, Viet Nam, June 10, 1999.

| Number | Patient ID Number | Age | Blood Volume (ml) |
|---------------|--------------------------|------------|--------------------------|
| 1 | H242 | 24 | 2 |
| 2 | H243 | 23 | 2 |
| 3 | H248 | 23 | 2 |
| 4 | H249 | 19 | 2 |
| 5 | H250 | 17 | 2 |
| 6 | H276 | 21 | 2 |
| 7 | H277 | 19 | 2 |
| 8 | H279 | 17 | 2 |
| 9 | H283 | 22 | 2 |
| 10 | H284 | 16 | 2 |
| 11 | H285 | 23 | 2 |
| 12 | H288 | 16 | 2 |
| 13 | H289 | 16 | 2 |
| 14 | H291 | 23 | 2 |
| 15 | H292 | 23 | 2 |
| 16 | H294 | 17 | 2 |
| 17 | H300 | 19 | 2 |
| 18 | H305 | 24 | 2 |
| 19 | H313 | 21 | 2 |
| 20 | H314 | 16 | 2 |
| 21 | H318 | 23 | 2 |
| 22 | H320 | 24 | 2 |
| 23 | H321 | 19 | 2 |
| 24 | H327 | 16 | 2 |
| 25 | H330 | 18 | 2 |
| 26 | H331 | 16 | 2 |
| 27 | H333 | 16 | 2 |
| 28 | H335 | 21 | 2 |
| 29 | H338 | 21 | 2 |
| 30 | H339 | 24 | 2 |

Table A1.3 Samples of whole human blood and breast milk collected from females >25 years of age; A So commune, Aluoi Valley, Viet Nam, June 10, 1999.

| Number | Patient ID Number | Age | Blood Volume (ml) | Breast Milk Sample Number |
|--------|-------------------|-----|-------------------|---------------------------|
| 1 | H176 | 29 | 2.5 | 99VN-627 |
| 2 | H177 | 48 | 3 | |
| 3 | H178 | 68 | 3 | |
| 4 | H179 | 50 | 3 | 99VN-628 |
| 5 | H180 | 47 | 2 | |
| 6 | H181 | 50 | 3 | |
| 7 | H184 | 34 | 3 | 99VN-631 |
| 8 | H185 | 65 | 2 | |
| 9 | H186 | 28 | 2 | 99VN-632 |
| 10 | H187 | 56 | 2 | 99VN-633 |
| 11 | H188 | 58 | 2 | |
| 12 | H189 | 50 | 2.5 | 99VN-634 |
| 13 | H192 | 60 | 2 | |
| 14 | H193 | 27 | 3 | |
| 15 | H194 | 25 | 2 | 99VN-636 |
| 16 | H195 | 41 | 2.5 | |
| 17 | H198 | 26 | 2.5 | 99VN-637 |
| 18 | H201 | 44 | 2.5 | |
| 19 | H202 | 26 | 2 | 99VN-640 |
| 20 | H203 | 30 | 2 | 99VN-641 |
| 21 | H204 | 35 | 2.5 | 99VN-642 |
| 22 | H205 | 60 | 2.5 | |
| 23 | H206 | 30 | 2.5 | |
| 24 | H212 | 53 | 3 | |
| 25 | H213 | 52 | 3 | |
| 26 | H214 | 43 | 3 | |
| 27 | H259 | 27 | 3 | |
| 28 | H260 | 25 | 2 | 99VN-650 |
| 29 | H262 | 25 | 2 | |
| 30 | H266 | 32 | 2 | |
| 31 | H267 | 28 | 2 | |
| 32 | H268 | 31 | 3 | 99VN-651 |
| 33 | H270 | 45 | 2 | |
| 34 | H271 | 35 | 3 | 99VN-652 |
| 35 | H272 | 26 | 2 | |
| 36 | H274 | 29 | 2 | 99VN-653 |
| 37 | H275 | 25 | 2 | 99VN-654 |
| 38 | H351 | 58 | 2 | |
| 39 | H355 | 51 | 3 | |
| 40 | H364 | 35 | 2 | 99VN-658 |
| 41 | H365 | 27 | 2 | 99VN-659 |
| 42 | H375 | 47 | 2 | |
| 43 | H377 | 57 | 3 | |
| 44 | H380 | 30 | 3 | 99VN-660 |

Table A1.4 Samples of whole human blood and breast milk collected from females <25 years of age; A So commune, Aluoi Valley, Viet Nam, June 10, 1999.

| Number | Patient ID Number | Age | Blood Volume (ml) | Breast Milk Sample Number |
|---------------|--------------------------|------------|--------------------------|----------------------------------|
| 1 | H182 | 22 | 3 | 99VN-629 |
| 2 | H183 | 24 | 2 | 99VN-630 |
| 3 | H190 | 22 | 2 | |
| 4 | H191 | 23 | 4 | 99VN-635 |
| 5 | H196 | 21 | 3 | |
| 6 | H197 | 16 | 3 | |
| 7 | H199 | 21 | 3.5 | 99VN-638 |
| 8 | H200 | 23 | 3 | 99VN-639 |
| 9 | H209 | 24 | 2.5 | 99VN-643 |
| 10 | H223 | 20 | 3 | |
| 11 | H224 | 16 | 3 | |
| 12 | H251 | 24 | 3 | |
| 13 | H257 | 20 | 3 | |
| 14 | H261 | 23 | 2 | 99VN-649 |
| 15 | H263 | 20 | 1.5 | |
| 16 | H264 | 16 | 3 | |
| 17 | H269 | 18 | 2.5 | |
| 18 | H273 | 21 | 2 | |
| 19 | H352 | 18 | 3 | |
| 20 | H353 | 18 | 1.5 | 99VN-655 |
| 21 | H354 | 19 | - | |
| 22 | H356 | 19 | 2.5 | |
| 23 | H357 | 16 | 3 | |
| 24 | H358 | 21 | 2.5 | |
| 25 | H359 | 15 | 2.5 | |
| 26 | H360 | 19 | 2 | |
| 27 | H361 | 20 | 2 | 99VN-656 |
| 28 | H362 | 18 | 2.5 | |
| 29 | H363 | 22 | 2 | 99VN-657 |
| 30 | H366 | 16 | 2 | |
| 31 | H367 | 19 | 2 | |
| 32 | H368 | 20 | 2 | |
| 33 | H369 | 20 | 2 | |
| 34 | H370 | 18 | 2 | |
| 35 | H371 | 23 | 2.5 | |
| 36 | H372 | 24 | 2 | |
| 37 | H373 | 23 | 2 | |
| 38 | H374 | 16 | 2 | |
| 39 | H378 | 18 | 3 | |
| 40 | H379 | 23 | 3 | |
| 41 | H381 | 23 | 3 | |

Table A1.5 Samples of whole human blood collected from males >25 years of age; Huong Lam commune, Aluoi Valley, Viet Nam, June 9, 1999.

| Number | Patient ID Number | Age | Blood Volume (ml) |
|---------------|--------------------------|------------|--------------------------|
| 1 | H001 | 26 | 2 |
| 2 | H002 | 33 | 2 |
| 3 | H005 | 25 | 3 |
| 4 | H006 | 25 | 3 |
| 5 | H008 | 30 | 2 |
| 6 | H009 | 28 | 3 |
| 7 | H010 | 26 | 3 |
| 8 | H011 | 44 | 3 |
| 9 | H013 | 29 | 3 |
| 10 | H014 | 45 | 3 |
| 11 | H015 | 46 | 2.5 |
| 12 | H018 | 27 | 3 |
| 13 | H021 | 44 | 3.2 |
| 14 | H023 | 29 | 2 |
| 15 | H024 | 40 | 2.5 |
| 16 | H028 | 31 | 2.5 |
| 17 | H029 | 26 | 2 |
| 18 | H033 | 26 | 2 |
| 19 | H034 | 36 | 2.5 |
| 20 | H037 | 28 | 2 |
| 21 | H038 | 27 | 2.5 |
| 22 | H040 | 27 | 2 |
| 23 | H041 | 31 | 2.5 |
| 24 | H042 | 25 | 3 |
| 25 | H044 | 26 | 3 |
| 26 | H045 | 28 | 3 |
| 27 | H052 | 26 | 3 |
| 28 | H065 | 35 | 2 |
| 29 | H066 | 45 | 2 |
| 30 | H122 | 29 | 3 |
| 31 | H171 | 60 | 2.5 |

Table A1.6 Samples of whole human blood collected from males <25 years of age; Huong Lam commune, Aluoi Valley, Viet Nam, June 9, 1999.

| Number | Patient ID Number | Age | Blood Volume (ml) |
|--------|-------------------|-----|-------------------|
| 1 | H003 | 23 | 2 |
| 2 | H004 | 23 | 2 |
| 3 | H007 | 23 | 3 |
| 4 | H012 | 19 | 2 |
| 5 | H016 | 24 | 3.5 |
| 6 | H017 | 15 | 3.5 |
| 7 | H019 | 23 | 3 |
| 8 | H020 | 20 | 2.5 |
| 9 | H022 | 22 | 3 |
| 10 | H025 | 24 | 2.5 |
| 11 | H027 | 24 | 2.5 |
| 12 | H030 | 21 | 2.5 |
| 13 | H031 | 21 | 3 |
| 14 | H032 | 20 | 3 |
| 15 | H035 | 22 | 3.5 |
| 16 | H036 | 20 | 2 |
| 17 | H039 | 24 | 3 |
| 18 | H043 | 19 | 3 |
| 19 | H046 | 21 | 3 |
| 20 | H047 | 19 | 3 |
| 21 | H050 | 23 | 3 |
| 22 | H051 | 23 | 2 |
| 23 | H054 | 21 | 2.5 |
| 24 | H060 | 22 | 2 |
| 25 | H063 | 18 | 2 |
| 26 | H064 | 22 | 2 |
| 27 | H067 | 17 | 2 |
| 28 | H068 | 18 | 2 |
| 29 | H069 | 15 | 2 |
| 30 | H070 | 22 | 2 |
| 31 | H120 | 21 | 2 |
| 32 | H121 | 22 | 2 |
| 33 | H123 | 21 | 3 |

Table A1.7 Samples of whole human blood and breast milk collected from females >25 years of age; Huong Lam commune, Aluoi Valley, Viet Nam, June 9, 1999.

| Number | Patient ID Number | Age | Blood Volume (ml) | Breast Milk Sample Number |
|--------|-------------------|-----|-------------------|---------------------------|
| 1 | H081 | 30 | 2 | |
| 2 | H082 | 33 | 2 | 99VN-622 |
| 3 | H083 | 26 | 2 | 99VN-623 |
| 4 | H087 | 25 | 2 | 99VN-616 |
| 5 | H089 | 25 | 2 | 99VN-614 |
| 6 | H092 | 25 | 3 | |
| 7 | H094 | 26 | 2 | 99VN-611 |
| 8 | H098 | 37 | 2 | 99VN-607 |
| 9 | H100 | 49 | 2 | 99VN-605 |
| 10 | H102 | 36 | 2 | |
| 11 | H103 | 32 | 2 | |
| 12 | H105 | 35 | 2 | |
| 13 | H107 | 28 | 2 | 99VN-603 |
| 14 | H108 | 49 | 3 | |
| 15 | H110 | 25 | 2 | 99VN-626 |
| 16 | H114 | 27 | 2 | |
| 17 | H115 | 29 | 2 | |
| 18 | H116 | 36 | 2 | |
| 19 | H117 | 37 | 3.5 | |
| 20 | H127 | 25 | 1 | |
| 21 | H135 | 26 | 2 | |
| 22 | H136 | 27 | 2 | |
| 23 | H137 | 25 | 2 | |
| 24 | H140 | 26 | 2 | |
| 25 | H145 | 28 | 2 | |
| 26 | H149 | 30 | 2 | |
| 27 | H150 | 27 | 2 | |
| 28 | H174 | 30 | 2 | |
| 29 | H175 | 30 | 2 | |

Table A1.8 Samples of whole human blood and breast milk collected from females <25 years of age; Huong Lam commune, Aluoi Valley, Viet Nam, June 9, 1999.

| Number | Patient ID Number | Age | Blood Volume (ml) | Breast Milk Sample Number |
|--------|-------------------|-----|-------------------|---------------------------|
| 1 | H076 | 22 | 2 | |
| 2 | H077 | 22 | 2 | |
| 3 | H078 | 21 | 1.5 | 99VN-620 |
| 4 | H079 | 19 | 2 | 99VN-621 |
| 5 | H080 | 24 | 3 | |
| 6 | H084 | 24 | 3 | 99VN-624 |
| 7 | H085 | 22 | 2 | 99VN-618 |
| 8 | H086 | 22 | 2 | 99VN-617 |
| 9 | H088 | 22 | 2 | 99VN-615 |
| 10 | H090 | 24 | 1.5 | 99VN-613 |
| 11 | H091 | 22 | 2 | 99VN-612 |
| 12 | H095 | 22 | 3 | 99VN-610 |
| 13 | H096 | 23 | 2 | 99VN-609 |
| 14 | H097 | 21 | 2 | 99VN-608 |
| 15 | H099 | 22 | 2 | 99VN-606 |
| 16 | H104 | 24 | 2 | 99VN-604 |
| 17 | H106 | 19 | 2 | |
| 18 | H109 | 22 | 3 | |
| 19 | H111 | 22 | 3 | |
| 20 | H112 | 19 | 2 | 99VN-625 |
| 21 | H113 | 20 | 1.5 | |
| 22 | H118 | 19 | 2 | |
| 23 | H119 | 23 | 2 | |
| 24 | H128 | 24 | 3 | 99VN-619 |
| 25 | H148 | 22 | 2 | |
| 26 | H172 | 18 | 2 | |
| 27 | H173 | 17 | 2 | |

**Table A1.9 Samples of whole human blood collected from males
>25 years of age; Hong Thuong commune, Aluoi
Valley, Viet Nam, June 12, 1999.**

| Number | Patient ID Number | Age | Blood Volume (ml) |
|--------|-------------------|-----|-------------------|
| 1 | H626 | 49 | 2 |
| 2 | H627 | 59 | 2 |
| 3 | H628 | 39 | 2 |
| 4 | H629 | 35 | 2 |
| 5 | H630 | 39 | 2 |
| 6 | H631 | 62 | 2 |
| 7 | H632 | 49 | 2 |
| 8 | H633 | 78 | 1 |
| 9 | H636 | 72 | 2 |
| 10 | H637 | 35 | 2 |
| 11 | H638 | 65 | 2 |
| 12 | H639 | 42 | 2 |
| 13 | H640 | 54 | 2.5 |
| 14 | H641 | 37 | 2 |
| 15 | H642 | 39 | 1.5 |
| 16 | H643 | 37 | 2 |
| 17 | H644 | 69 | 1.5 |
| 18 | H646 | 62 | 2 |
| 19 | H648 | 25 | 2 |
| 20 | H649 | 43 | 2 |
| 21 | H651 | 41 | 3 |
| 22 | H652 | 60 | 2 |
| 23 | H653 | 51 | 2 |
| 24 | H654 | 59 | 2 |
| 25 | H655 | 59 | 2 |
| 26 | H656 | 59 | 2 |
| 27 | H659 | 25 | 2 |
| 28 | H660 | 29 | 2 |
| 29 | H668 | 48 | 2 |
| 30 | H671 | 62 | 2 |
| 31 | H673 | 50 | 2 |
| 32 | H675 | 68 | 2 |
| 33 | H676 | 38 | 2 |
| 34 | H677 | 62 | 2 |
| 35 | H693 | 25 | 2.5 |
| 36 | H700 | 31 | 2 |
| 37 | H712 | 35 | 2 |
| 38 | H713 | 60 | 2 |
| 39 | H714 | 41 | 2 |
| 40 | H715 | 46 | 2 |
| 41 | H716 | 26 | 2 |
| 42 | H718 | 49 | 2 |
| 43 | H720 | 36 | 2 |

Table A1.10 Samples of whole human blood collected from males <25 years of age; Hong Thuong commune, Aluoi Valley, Viet Nam, June 12, 1999.

| Number | Patient ID Number | Age | Blood Volume (ml) |
|--------|-------------------|-----|-------------------|
| 1 | H634 | 24 | 2 |
| 2 | H635 | 24 | 2 |
| 3 | H645 | 24 | 1.5 |
| 4 | H647 | 18 | 3 |
| 5 | H650 | 23 | 2 |
| 6 | H657 | 19 | 2 |
| 7 | H658 | 18 | 2 |
| 8 | H661 | 16 | 2 |
| 9 | H662 | 15 | 2 |
| 10 | H663 | 18 | 2 |
| 11 | H664 | 18 | 2.5 |
| 12 | H665 | 18 | 2 |
| 13 | H666 | 19 | 1.5 |
| 14 | H667 | 18 | 2 |
| 15 | H669 | 18 | 2 |
| 16 | H670 | 23 | 2 |
| 17 | H672 | 19 | 2 |
| 18 | H674 | 21 | 2 |
| 19 | H682 | 18 | 2 |
| 20 | H683 | 18 | 2 |
| 21 | H685 | 20 | 2 |
| 22 | H688 | 19 | 2 |
| 23 | H692 | 21 | 2 |
| 24 | H694 | 17 | 2 |
| 25 | H698 | 24 | 2 |
| 26 | H717 | 20 | 2 |
| 27 | H719 | 24 | 2 |

Table A1.11 Samples of whole human blood and breast milk collected from females >25 years of age; Hong Thuong commune, Aluoi Valley, Viet Nam, June 12, 1999.

| Number | Patient ID Number | Age | Blood Volume (ml) | Breast Milk Sample Number |
|--------|-------------------|-----|-------------------|---------------------------|
| 1 | H562 | 75 | 1.5 | |
| 2 | H563 | 32 | 2 | 99VN-577 |
| 3 | H564 | 45 | 2 | |
| 4 | H565 | 55 | 3.5 | |
| 5 | H566 | 60 | 3 | |
| 6 | H567 | 55 | 3 | |
| 7 | H568 | 40 | 2.5 | |
| 8 | H570 | 55 | 3 | |
| 9 | H572 | 34 | 2.5 | |
| 10 | H573 | 30 | 2 | |
| 11 | H575 | 42 | 2.5 | |
| 12 | H577 | 40 | 2.5 | |
| 13 | H578 | 48 | 2 | |
| 14 | H579 | 45 | 3 | |
| 15 | H582 | 25 | 2 | 99VN-583 |
| 16 | H585 | 40 | 3 | |
| 17 | H586 | 28 | 3 | |
| 18 | H589 | 55 | 3 | |
| 19 | H590 | 40 | 2 | |
| 20 | H592 | 28 | 2.5 | |
| 21 | H593 | 34 | 2 | 99VN-587 |
| 22 | H594 | 50 | 2.5 | |
| 23 | H596 | 30 | 2 | |
| 24 | H597 | 47 | 2 | |
| 25 | H598 | 29 | 2.5 | 99VN-588 |
| 26 | H600 | 48 | 2 | |
| 27 | H601 | 25 | 3 | |
| 28 | H602 | 36 | 2 | |
| 29 | H604 | 37 | 2 | |
| 30 | H605 | 41 | 2 | |
| 31 | H607 | 35 | 3 | 99VN-590 |
| 32 | H608 | 42 | 2 | |
| 33 | H609 | 25 | 2 | 99VN-591 |
| 34 | H610 | 39 | 2 | |
| 35 | H612 | 37 | 2 | |
| 36 | H614 | 35 | 2 | |
| 37 | H618 | 36 | 2 | 99VN-593 |

Table A1.12 Samples of whole human blood and breast milk collected from females <25 years of age; Hong Thuong commune, Aluoi Valley, Viet Nam, June 12, 1999.

| Number | Patient ID Number | Age | Blood Volume (ml) | Breast Milk Sample Number |
|--------|-------------------|-----|-------------------|---------------------------|
| 1 | H571 | 23 | 2 | |
| 2 | H574 | 23 | 2.5 | 99VN-578 |
| 3 | H576 | 17 | 3 | 99VN-579 |
| 4 | H580 | 20 | 2.5 | 99VN-580 |
| 5 | H581 | 22 | 2.5 | 99VN-581 |
| 6 | H583 | 22 | 2 | 99VN-582 |
| 7 | H584 | 21 | 2.5 | 99VN-584 |
| 8 | H587 | 24 | 2 | 99VN-585 |
| 9 | H588 | 21 | 2 | 99VN-586 |
| 10 | H591 | 24 | 3 | |
| 11 | H595 | 23 | 2 | |
| 12 | H599 | 24 | 2 | |
| 13 | H603 | 23 | 2 | |
| 14 | H606 | 23 | 2 | 99VN-589 |
| 15 | H611 | 22 | 2 | 99VN-592 |
| 16 | H621 | 20 | 2.5 | |
| 17 | H622 | 22 | 2.5 | |
| 18 | H623 | 19 | 2.5 | 99VN-594 |
| 19 | H702 | 22 | 2.5 | |
| 20 | H708 | 23 | 2 | |
| 21 | H709 | 22 | 2 | |
| 22 | H726 | 20 | 3 | |
| 23 | H727 | 24 | 2 | |
| 24 | H728 | 18 | 2 | |
| 25 | H729 | 19 | 2 | |

Table A1.13 Samples of whole human blood collected from males >25 years of age; Hong Van commune, Aluoi Valley, Viet Nam, June 11, 1999.

| Number | Patient ID Number | Age | Blood Volume (ml) |
|--------|-------------------|-----|-------------------|
| 1 | H344 | 59 | 2 |
| 2 | H345 | 44 | 2.5 |
| 3 | H346 | 40 | 2 |
| 4 | H347 | 39 | 2 |
| 5 | H348 | 36 | 2 |
| 6 | H349 | 66 | 2 |
| 7 | H384 | 67 | 3 |
| 8 | H385 | 69 | 2 |
| 9 | H386 | 64 | 2 |
| 10 | H388 | 60 | 2.5 |
| 11 | H389 | 62 | 2 |
| 12 | H390 | 38 | 3 |
| 13 | H391 | 62 | 2 |
| 14 | H392 | 56 | 2 |
| 15 | H393 | 70 | 1.5 |
| 16 | H394 | 60 | 2 |
| 17 | H395 | 49 | 2 |
| 18 | H396 | 62 | 3 |
| 19 | H397 | 35 | 3 |
| 20 | H398 | 40 | 2 |
| 21 | H401 | 64 | 2 |
| 22 | H402 | 57 | 2 |
| 23 | H403 | 60 | 1.5 |
| 24 | H404 | 33 | 2 |
| 25 | H405 | 60 | 2.5 |
| 26 | H407 | 63 | 2.5 |
| 27 | H408 | 62 | 2 |
| 28 | H409 | 54 | 2 |
| 29 | H410 | 43 | 1.5 |
| 30 | H411 | 28 | 2 |
| 31 | H413 | 29 | 2 |
| 32 | H414 | 32 | 2.5 |
| 33 | H415 | 27 | 1.5 |
| 34 | H448 | 30 | 2 |
| 35 | H531 | 25 | 2 |
| 36 | H539 | 45 | 2 |
| 37 | H544 | 55 | 2 |

Table A1.14 Samples of whole human blood collected from males <25 years of age; Hong Van commune, Aluoi Valley, Viet Nam, June 11, 1999.

| Number | Patient ID Number | Age | Blood Volume (ml) |
|--------|-------------------|-----|-------------------|
| 1 | H382 | 22 | 1.5 |
| 2 | H383 | 20 | 2 |
| 3 | H387 | 17 | 2 |
| 4 | H399 | 24 | 2 |
| 5 | H400 | 23 | 3 |
| 6 | H406 | 21 | 2 |
| 7 | H412 | 23 | 2 |
| 8 | H417 | 24 | 2 |
| 9 | H421 | 16 | 2 |
| 10 | H422 | 20 | 2 |
| 11 | H424 | 23 | 2 |
| 12 | H427 | 24 | 2 |
| 13 | H428 | 22 | 2 |
| 14 | H429 | 20 | 2.5 |
| 15 | H430 | 23 | 1 |
| 16 | H431 | 21 | 2 |
| 17 | H433 | 22 | 2 |
| 18 | H434 | 20 | 2 |
| 19 | H435 | 17 | 2 |
| 20 | H436 | 19 | 2 |
| 21 | H437 | 19 | 2 |
| 22 | H441 | 24 | 2 |
| 23 | H442 | 23 | 3 |
| 24 | H444 | 22 | 2 |
| 25 | H445 | 17 | 2 |
| 26 | H447 | 19 | 2 |
| 27 | H449 | 23 | 2 |
| 28 | H526 | 20 | 2 |
| 29 | H527 | 18 | 2 |
| 30 | H528 | 21 | 3.5 |
| 31 | H532 | 21 | 2 |
| 32 | H533 | 24 | 2 |
| 33 | H535 | 22 | 2 |
| 34 | H536 | 24 | 2 |
| 35 | H537 | 18 | 2.5 |
| 36 | H538 | 21 | 2.5 |
| 37 | H540 | 17 | 2 |
| 38 | H541 | 19 | 2 |
| 39 | H542 | 19 | 2 |
| 40 | H543 | 20 | 2 |

Table A1.15 Samples of whole human blood and breast milk collected from females >25 years of age; Hong Van commune, Aluoi Valley, Viet Nam, June 11, 1999.

| Number | Patient ID Number | Age | Blood Volume (ml) | Breast Milk Sample Number |
|--------|-------------------|-----|-------------------|---------------------------|
| 1 | H451 | 35 | 3 | |
| 2 | H452 | 40 | 2 | |
| 3 | H455 | 39 | 2.5 | |
| 4 | H463 | 49 | 2 | |
| 5 | H466 | 50 | 3 | |
| 6 | H467 | 25 | 3 | 99VN-673 |
| 7 | H469 | 32 | 2 | |
| 8 | H470 | 58 | 2.5 | |
| 9 | H471 | 30 | 2 | 99VN-674 |
| 10 | H472 | 60 | 3 | |
| 11 | H473 | 25 | 3 | 99VN-675 |
| 12 | H476 | 48 | 2 | |
| 13 | H477 | 38 | 3 | |
| 14 | H478 | 47 | 3 | |
| 15 | H479 | 60 | 3 | |
| 16 | H484 | 50 | 3 | |
| 17 | H485 | 46 | 3 | |
| 18 | H487 | 50 | 3 | |
| 19 | H488 | 55 | 2.5 | |
| 20 | H489 | 30 | 2.5 | |
| 21 | H490 | 26 | 3 | |
| 22 | H493 | 26 | 2 | 99VN-683 |
| 23 | H494 | 27 | 2 | 99VN-684 |
| 24 | H495 | 43 | 2 | |
| 25 | H496 | 50 | 2.5 | |
| 26 | H497 | 26 | 2 | 99VN-685 |
| 27 | H498 | 59 | 2 | |

Table A1.16 Samples of whole human blood and breast milk collected from females <25 years of age; Hong Van commune, Aluoi Valley, Viet Nam, June 11, 1999.

| Number | Patient ID Number | Age | Blood Volume (ml) | Breast Milk Sample Number |
|--------|-------------------|-----|-------------------|---------------------------|
| 1 | H453 | 21 | 3 | 99VN-663 |
| 2 | H454 | 20 | 1.5 | 99VN-664 |
| 3 | H456 | 23 | 2 | 99VN-665 |
| 4 | H457 | 20 | 1.5 | 99VN-666 |
| 5 | H458 | 23 | 2.5 | 99VN-667 |
| 6 | H459 | 23 | 2 | 99VN-669 |
| 7 | H460 | 21 | 2.5 | 99VN-668 |
| 8 | H461 | 24 | 3 | 99VN-670 |
| 9 | H464 | 21 | 1.5 | 99VN-671 |
| 10 | H465 | 22 | 2 | 99VN-672 |
| 11 | H468 | 22 | 3 | |
| 12 | H474 | 19 | 3 | 99VN-676 |
| 13 | H475 | 23 | 2.5 | 99VN-677 |
| 14 | H480 | 20 | 2.5 | 99VN-678 |
| 15 | H481 | 23 | 3 | |
| 16 | H483 | 20 | 3 | 99VN-679 |
| 17 | H486 | 19 | 2 | 99VN-680 |
| 18 | H491 | 21 | 2 | 99VN-681 |
| 19 | H492 | 22 | 3 | 99VN-682 |
| 20 | H502 | 19 | 3 | 99VN-686 |
| 21 | H503 | 24 | 3 | |
| 22 | H504 | 21 | 2 | |
| 23 | H508 | 22 | 2 | |
| 24 | H512 | 22 | 2 | |
| 25 | H516 | 19 | 2 | |
| 26 | H517 | 16 | 2 | |
| 27 | H518 | 17 | 2.5 | |
| 28 | H519 | 16 | 2.5 | |
| 29 | H520 | 19 | 2 | |
| 30 | H522 | 15 | 2 | |
| 31 | H523 | 19 | 3 | |
| 32 | H525 | 16 | 2.5 | |
| 33 | H552 | 19 | 2 | |
| 34 | H553 | 15 | 2 | |
| 35 | H554 | 17 | 2 | |
| 36 | H555 | 24 | 2 | |
| 37 | H561 | 17 | 2 | |

Table A1.17 Human breast milk samples collected from lactating primiparous and multiparous females; A So commune, Aluoi Valley, Viet Nam, June 1999 (samples used in the composite for PCB/Pesticide analyses are indicated by "PCB/Pest.").

| Patient ID Number | Milk Sample Number | Age | Number of Children | Age of Children | Duration of Breastfeeding | Total Sample Volume (ml) | Comments |
|-------------------|--------------------|-----|--------------------|-------------------------------------|---------------------------|--------------------------|--|
| H176 | 99VN627 | 29 | 7 | 3y, 1y | 2y, 1y | 30 | Only 2 children living |
| H179 | 99VN628 | 50 | 10 | range 2-20y | 2years each | 35 | Mother of child with spina bifida |
| H182 | 99VN629 | 22 | 1 | 1y | 1y | 40 | |
| H183 | 99VN630 | 24 | 2 | 3.5y, 1y | 1y, 1y | 15 | PCB/Pest. |
| H184 | 99VN631 | 34 | 7 | 10y, 7y, 4y, 2y, 5 mo | 1.5y each, 5mo | 40 | Only 5 children living |
| H186 | 99VN632 | 28 | 7 | 15y, 14y, 6y, 3y, 5mo | 3mo each, 5mo | 25 | Only 5 children living |
| H187 | 99VN633 | 56 | 8 | 23y, 20y, 15y, 13y, 12y, 9y, 7y, 1y | 2y each, 1y | 40 | |
| H189 | 99VN634 | 50 | 12 | range 1-26y | 2y each, 1y | 15 | PCB/Pest. |
| H191 | 99VN635 | 23 | 3 | 5y, 4y, 2y | 1y each | 20 | |
| H194 | 99VN636 | 25 | 3 | 7y, 5y, 2.5y | 3y, 3y, 2.5y | 25 | |
| H198 | 99VN637 | 26 | 4 | 2y, 6mo | 1.5y, 6mo | 35 | Only 2 children living |
| H199 | 99VN638 | 21 | 5 | 1y | 1y | 35 | Only 1 child living |
| H200 | 99VN639 | 23 | 2 | 4y, 1.5mo | 2.5y, 1.5mo | 40 | PCB/Pest. |
| H202 | 99VN640 | 26 | 2 | 4y, 3y | 2y, 3y | 25 | PCB/Pest. |
| H203 | 99VN641 | 30 | 3 | 11y, 7y, 8mo | 3y, 3y, 8mo | 15 | |
| H204 | 99VN642 | 35 | 6 | 12y, 10y, 8y, 6y, 5y, 2mo | 1-2.5y each, 2mo | 30 | |
| H209 | 99VN643 | 24 | 2 | 4y, 5mo | 2y, 5mo | 15 | PCB/Pest. |
| H215 | 99VN644 | 29 | 4 | 13y, 8y, 4y, 1y | >2years, 1y | 30 | Mother suffers from some form of deformity (bone/spinal) |
| H218 | 99VN645 | 46 | 5 | 19y, 17y, 14y, 8y, 2y | 2years each | - | Pregnant |
| H221 | 99VN646 | 26 | 4 | 9y, 7y, 4y, 2y | 1y each, 2y | 20 | |
| H225 | 99VN647 | 25 | 2 | 4y, 3y | 2y, 3y | - | |
| H258 | 99VN648 | 20 | 1 | 1mo | 1mo | 30 | |
| H261 | 99VN649 | 23 | 1 | 5mo | 5mo | 30 | |
| H260 | 99VN650 | 25 | 4 | 9y, 8y, 4y, 1.5y | 2y each, 1.5y | 35 | |
| H268 | 99VN651 | 31 | 7 | 12y, 11y, 8y, 4y, 3y, 2y, 2mo | 2y each, 2mo | 40 | |
| H271 | 99VN652 | 35 | 6 | 22y, 16y, 11y, 10y, 8y, 3mo | 1.5y, 3mo | 30 | |
| H274 | 99VN653 | 29 | 2 | 4y, 2y | 1.5y, 2y | 30 | PCB/Pest. |
| H275 | 99VN654 | 25 | 3 | 6y, 4y, 1y | 2y, 2y 1y | 25 | PCB/Pest. |
| H353 | 99VN655 | 18 | 1 | 1y | 1y | 15 | |
| H361 | 99VN656 | 20 | 2 | 2y | 2y | 15-20 | Only 1 child living; PCB/Pest. |
| H363 | 99VN657 | 22 | 2 | 3y, 1y | 3y, 1y | 40 | PCB/Pest. |
| H364 | 99VN658 | 35 | 5 | 9y, 8y, 6y, 4y, 2y | 1.5y each, 2y | 25 | |
| H365 | 99VN659 | 27 | 3 | 5y, 3y, 1mo | 1y, 1y, 1mo | 30 | |
| H380 | 99VN660 | 30 | 2 | 12y, 1y | 2y, 1y | 30 | PCB/Pest. |

Table A1.18 Human breast milk samples collected from lactating primiparous and multiparous females; Huong Lam commune, Aluoi Valley, Viet Nam June 1999 (samples used in the composite for PCB/Pesticide analyses are indicated by "PCB/Pest.").

| Patient ID Number | Milk Sample Number | Age | Number of Children | Age of Children | Duration of Breastfeeding | Total Sample Volume (ml) | Comments |
|-------------------|--------------------|-----|--------------------|--------------------------|---------------------------|--------------------------|--|
| H107 | 99VN603 | 28 | 1 | 3mo | 3mo | 35 | |
| H104 | 99VN604 | 24 | 3 | 6y, 5y, 1.5y | 1y, 4y, 1.5y | 30 | |
| H100 | 99VN605 | 49 | 6 | 15y, 8y, 7y, 6y, 4y, 5mo | 1y each, 5mo | 30 | |
| H099 | 99VN606 | 22 | 3 | 5y, 3y, 18 days | 1y, 2.5y, 18 days | 50 | |
| H098 | 99VN607 | 37 | 10 | 7mo | 2.5years each, 7mo | 40 | Also breast feeds other children in village; Only 4 children living; Age of youngest child indicated |
| H097 | 99VN608 | 21 | 1 | 20 days | 20 days | 60 | Also breast feeds other children in village |
| H096 | 99VN609 | 23 | 1 | 7mo | 7mo | 40 | |
| H095 | 99VN610 | 22 | 1 | 2y | 2y | 20 | Also breast feeds other children in village; PCB/Pest. |
| H094 | 99VN611 | 26 | 2 | 4y, 1.5y | 1y, 1.5y | 35 | PCB/Pest. |
| H091 | 99VN612 | 22 | 1 | 1.5y | 1.5y | 40 | Also breast feeds other children in village; PCB/Pest. |
| H090 | 99VN613 | 24 | 2 | 5y, 5mo | 1y, 5mo | 60 | PCB/Pest. |
| H089 | 99VN614 | 25 | 3 | 6y, 3.5y, 5mo | 1y, 1y, 5mo | 40 | |
| H088 | 99VN615 | 22 | 2 | 3y, 11mo | 14mo, 11mo | 40 | PCB/Pest. |
| H087 | 99VN616 | 25 | 2 | 4y, 8mo | 1.5y, 8mo | 35 | PCB/Pest. |
| H086 | 99VN617 | 22 | 3 | 5y, 2y, 7mo | 1y, 8mo, 7mo | 40 | |
| H085 | 99VN618 | 22 | 1 | 9mo | 9mo | 30 | PCB/Pest. |
| H128 | 99VN619 | 24 | 1 | 10mo | 10mo | 35 | PCB/Pest. |
| H078 | 99VN620 | 21 | 1 | 2y | 2y | 30 | PCB/Pest. |
| H079 | 99VN621 | 19 | 2 | 9y, 2y | 2years each | 30 | PCB/Pest. |
| H082 | 99VN622 | 33 | 3 | 9y, 7y, 5mo | 1.5y, 1.5y, 5mo | 25 | |
| H083 | 99VN623 | 26 | 4 | 9y, 7y, 3y, 7mo | 1.5y, 1.5y, 1.5y, 7mo | 30 | |
| H084 | 99VN624 | 24 | 2 | 2.5y, 6mo | < 1y, 6mo | 30 | |
| H112 | 99VN625 | 19 | 1 | 8mo | 8mo | 30 | |
| H110 | 99VN626 | 25 | 3 | 5y, 3y, 4mo | 2y, 2y, 4mo | 30 | |

Table A1.19 Human breast milk samples collected from lactating primiparous and multiparous females; Hong Thuong commune, Aluoi Valley, Viet Nam, June 1999 (samples used in the composite for PCB/Pesticide analyses are indicated by "PCB/Pest.").

| Patient ID Number | Milk Sample Number | Age | Number of Children | Age of Children | Duration of Breastfeeding | Total Sample Volume (ml) | Comments |
|-------------------|--------------------|-----|--------------------|-----------------------------|----------------------------|--------------------------|-----------|
| H563 | 99VN577 | 32 | 4 | 8y, 5y, 3y, 1y | 2y (1st 3 children), 1y | 15 | |
| H574 | 99VN578 | 23 | 1 | 1.5y | 1.5y | 25 | PCB/Pest. |
| H576 | 99VN579 | 17 | 1 | 5mo | 5mo | 40 | PCB/Pest. |
| H580 | 99VN580 | 20 | 2 | 3y, 1.5y | 2y, 1.5y | 40 | PCB/Pest. |
| H581 | 99VN581 | 22 | 2 | 3y, 1.5y | 1y, 1.5y | 20 | PCB/Pest. |
| H583 | 99VN582 | 22 | 1 | 1.5y | 1.5y | 35 | PCB/Pest. |
| H582 | 99VN583 | 25 | 3 | 4.5y, 2.5y, 5mo | 1.5y, 1.5y, 5mo | 40 | |
| H584 | 99VN584 | 21 | 1 | 1y | 1y | 35 | PCB/Pest. |
| H587 | 99VN585 | 24 | 2 | 3y, 1.5y | 2mo, 1.5y | 25 | PCB/Pest. |
| H588 | 99VN586 | 21 | 1 | 6mo | 6mo | 30 | PCB/Pest. |
| H593 | 99VN587 | 34 | 6 | 15y, 12y, 10y, 9y, 6y, 8mo | 1.5y (1st 5 children), 8mo | 35 | |
| H598 | 99VN588 | 29 | 2 | 5y, 14mo | 1.5y, 14mo | 25 | |
| H606 | 99VN589 | 23 | 2 | 5y, 4mo | 2.5y, 4mo | 30 | |
| H607 | 99VN590 | 35 | 4 | 9y, 7y, 6y, 3y | 3y each | 40 | |
| H609 | 99VN591 | 25 | 3 | 7y, 3y, 1y | 2y, 2y, 1y | 25 | |
| H611 | 99VN592 | 22 | 1 | 1y | 1y | 30 | PCB/Pest. |
| H618 | 99VN593 | 36 | 4 | 14y, 10y, 7y, 7mo | 2y (1st 3 children), 7mo | 40 | |
| H623 | 99VN594 | 19 | 1 | 2mo | 2mo | 40 | PCB/Pest. |
| H703 | 99VN595 | 35 | 5 | 12y, 10y, 8y, 5y, 1y | 1y each | 40 | |
| H624 | 99VN600 | 33 | 6 | 14y, 13y, 11y, 9y, 4y, 1.5y | 2y (1st 5 children), 1.5y | 35 | |

Table A1.20 Human breast milk samples collected from lactating primiparous and multiparous females; Hong Van commune, Aluoi Valley, Viet Nam, June 1999 (samples used in the composite for PCB/Pesticide analyses are indicated by "PCB/Pest.").

| Patient ID Number | Milk Sample Number | Age | Number of Children | Age of Children | Duration of Breastfeeding | Total Sample Volume (ml) | Comments |
|-------------------|--------------------|-----|--------------------|--------------------|---------------------------|--------------------------|---|
| H453 | 99VN663 | 21 | 2 | 4y, 1.5y | 2y, 1.5y | 25 | PCB/Pest. |
| H454 | 99VN664 | 20 | 2 | 3y, 1y | 1y, 1y | 35 | PCB/Pest. |
| H456 | 99VN665 | 23 | 3 | 6y, 4y, 7mo | 1y, 1y, 7mo | 40 | |
| H457 | 99VN666 | 20 | 1 | 5mo | 5mo | 40 | |
| H458 | 99VN667 | 23 | 1 | 2mo | 2mo | 40 | |
| H460 | 99VN668 | 21 | 1 | 1.5y | 1.5y | 35 | PCB/Pest. |
| H459 | 99VN669 | 23 | 2 | 4y, 6mo | 1.5y, 6mo | 30 | |
| H461 | 99VN670 | 24 | 2 | 3y, 1y | 1y, 1y | 25 | |
| H464 | 99VN671 | 21 | 2 | 2y, 2mo | 1y, 2mo | 15 | Mother shows possible birth defect; PCB/Pest. |
| H465 | 99VN672 | 22 | 2 | 4y, 9mo | 1.5y, 9mo | 25 | |
| H467 | 99VN673 | 25 | 3 | 5y, 3y, 1y | 1y, 1y, 1y | 35 | |
| H471 | 99VN674 | 30 | 4 | 12y, 10y, 6y, 1.5y | 2y, 1.5y | 20 | |
| H473 | 99VN675 | 25 | 3 | 7y, 4y, 2y | 2.5y, 2.5y, 2y | 40 | |
| H474 | 99VN676 | 19 | 1 | 1.5y | 1.5y | 35 | PCB/Pest. |
| H475 | 99VN677 | 23 | 2 | 3y, 10mo | 2y, 10mo | 40 | |
| H480 | 99VN678 | 20 | 1 | 1mo | 1mo | 40 | |
| H483 | 99VN679 | 20 | 1 | 7.5mo | 7.5mo | 50 | PCB/Pest. |
| H486 | 99VN680 | 19 | 1 | 9mo | 9mo | 35 | PCB/Pest. |
| H491 | 99VN681 | 21 | 1 | 6mo | 6mo | 40 | PCB/Pest. |
| H492 | 99VN682 | 22 | 1 | 1y | 1y | 40 | PCB/Pest. |
| H493 | 99VN683 | 26 | 1 | 4mo | 4mo | 10 | PCB/Pest. |
| H494 | 99VN684 | 27 | 4 | 5y, 3y, 2y, 2.5mo | 1y, 2.5mo | 40 | |
| H497 | 99VN685 | 26 | 2 | 3y, 4mo | 1y, 4mo | 40 | |
| H502 | 99VN686 | 19 | 1 | 1mo | 1mo | 50 | |

Appendix A2

**AXYS ANALYTICAL SERVICES
REPORT TO HATFIELD
CONSULTANTS LTD
February 2000**

*ANALYSIS OF POLYCHLORINATED
DIOXINS AND FURANS AND
CHLORINATED ORGANICS FROM
VIET NAM*

- **Technical Report**
 - Introduction**
 - Sample Handling**
 - Analytical Methods**
 - Analytical Results**
 - Quality Assurance/Quality Control**
 - Calculations**
 - Detailed Analytical Methods**

- **Section 1**
 - Dioxin/Furan Analysis Reports:**
 - Soil**

- **Section 2**
 - Dioxin/Furan Analysis Reports:**
 - Plant and Animal Tissues**

- **Section 3**
 - Dioxin/Furan Analysis Reports:**
 - Human Breast Milk**

- **Section 4**
 - Dioxin/Furan Analysis Reports:**
 - Human Whole Blood**

- **Section 5**
 - Dioxin/Furan Analysis Reports:**
 - Vacutainer Proof**

- **Section 6**
PCD/Pesticide Analysis Reports:
Human Breast Milk

- **Section 7**
Particle Size Distribution (Soil)
Total Organic Carbon (Soil)

- **Section 8**
Laboratory Quality Control:
Sample Reports

- ▶ **Procedural Blanks**

- Soil (PCDD/PCDF)
 - Plant and Animal Tissues (PCDD/PCDF)
 - Milk (PCDD/PCDF)
 - Human Whole Blood (PCDD/PCDF)
 - Human Breast Milk (PCB/Pesticides)

- ▶ **Spiked Matrix**

- Soil (PCDD/PCDF)
 - Plant and Animal Tissues (PCDD/PCDF)
 - Milk (PCDD/PCDF)
 - Human Whole Blood (PCDD/PCDF)
 - Human Breast Milk (PCB/Pesticides)

- **Section 9**
Batch Summary Sheets

AAS 2607

**ANALYSIS OF POLYCHLORINATED
DIOXINS AND FURANS
AND CHLORINATED ORGANICS
IN SAMPLES FROM VIETNAM**

FINAL REPORT

Prepared for:

**HATFIELD CONSULTANTS LTD
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Prepared by:

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February 2000

TABLE OF CONTENTS

| | <u>Page</u> |
|--|-------------|
| 1. Introduction..... | 1 |
| 2. Sample Handling | 1 |
| 3. Analytical Methods..... | 6 |
| 3.1 Analysis of Polychlorinated Dibenzodioxins and Dibenzofurans | 6 |
| 3.2 Chlorinated Pesticides and PCBs..... | 6 |
| 4. Analytical Results | 7 |
| 5. Quality Assurance/Quality Control | 7 |
| 5.1 Procedural Blanks | 8 |
| 5.2 Duplicates | 8 |
| 5.3 Surrogate Standard Recoveries | 8 |
| 5.4 Laboratory Reference Samples..... | 8 |
| 5.5 Detection Limits | 9 |
| 6. Calculations | 9 |
| Appendix I. Analytical Methods | |
| Appendix II. Dioxin/Furan Analysis Reports | |
| Appendix III. PCB/Pesticide Analysis Reports | |
| Appendix IV. Particle Size Determination/TOC Results | |
| Appendix V. Laboratory Quality Control Sample Reports | |
| Appendix VI. Batch Summary Sheets | |

List of Tables

| | |
|---|---|
| Table 1. Correlation Between Axys Sample Number and Hatfield Sample Identification..... | 2 |
|---|---|

1. INTRODUCTION

Axys Analytical Services Ltd. (Axys) was contracted by Hatfield Consultants Ltd. (Hatfield) to conduct trace organic analyses on environmental and biological samples from Vietnam. These samples included soil, tissue, human blood and breast milk samples. The samples were analyzed for polychlorinated dibenzodioxins and dibenzofurans and/or chlorinated pesticides and PCBs. Particle size distribution and total organic carbon (TOC) analyses were carried out on soil samples by Soilcon Laboratories Ltd., Vancouver, under subcontract to Axys. Table 1 presents a correlation between the Axys ID number and the corresponding Hatfield sample description for each sample.

The sample handling protocols, analysis procedures and QA/QC results are documented in this final report. Complete data reports for all samples are presented. Results for QA/QC samples (procedural blanks, analysis duplicates, and internal reference materials) are also presented.

2. SAMPLE HANDLING

The importation and storage of these samples were authorized by the Government of Canada and all storage, sample handling and laboratory procedures satisfied the requirements of the Permit to Import Animal Specimens and Product Samples issued by the Canadian Food Inspection Agency and the Permit to Import Human Pathogen(s) issued by the Health Protection Branch, Laboratory Centre for Disease Control.

Samples were shipped and received frozen. However, 38 milk samples (used to make composite samples, L2044-1 to -4), had thawed during shipping. Upon receipt at Axys, all samples were stored at -20°C. The samples were received and maintained using chain-of-custody procedures.

Soil Samples

Soil samples were homogenized by stirring and sieving. Separate subsamples were taken for percent moisture determination, and particle size/TOC analysis. An additional subsample (5 g) was taken and returned to Hatfield for metal analysis. Prior to extraction, samples were thawed and homogenized by hand stirring.

Table 1
Correlation Between Axys Sample Identification and Hatfield Sample Identification

| AXYS ID | SAMPLE DESCRIPTION | MATRIX | ANALYSES¹ |
|----------------|---------------------------|---------------|-----------------------------|
| L1610-1 | 99VN-001 | Soil | DX/F, PSD, TOC |
| L1610-2 | 99VN-003 | Soil | DX/F, PSD, TOC |
| L1610-3 | 99VN-004 | Soil | DX/F, PSD, TOC |
| L1610-4 | 99VN-006 | Soil | DX/F, PSD, TOC |
| L1610-5 | 99VN-008 | Soil | DX/F, PSD, TOC |
| L1610-6 | 99VN-010 | Soil | DX/F, PSD, TOC |
| L1610-7 | 99VN-012 | Soil | DX/F, PSD, TOC |
| L1610-8 | 99VN-014 | Soil | DX/F, PSD, TOC |
| L1610-9 | 99VN-016 | Soil | DX/F, PSD, TOC |
| L1610-10 | 99VN-018 | Soil | DX/F, PSD, TOC |
| L1610-11 | 99VN-020 | Soil | DX/F, PSD, TOC |
| L1610-12 | 99VN-022 | Soil | DX/F, PSD, TOC |
| L1610-13 | 99VN-023 | Soil | DX/F, PSD, TOC |
| L1610-14 | 99VN-025 | Soil | DX/F, PSD, TOC |
| L1610-15 | 99VN-027 | Soil | DX/F, PSD, TOC |
| L1610-16 | 99VN-029 | Soil | DX/F, PSD, TOC |
| L1610-17 | 99VN-031 | Soil | DX/F, PSD, TOC |
| L1610-18 | 99VN-033 | Soil | DX/F, PSD, TOC |
| L1610-19 | 99VN-035 | Soil | DX/F, PSD, TOC |
| L1610-20 | 99VN-037 | Soil | DX/F, PSD, TOC |
| L1610-21 | 99VN-039 | Soil | DX/F, PSD, TOC |
| L1610-22 | 99VN-041 | Soil | DX/F, PSD, TOC |
| L1610-23 | 99VN-043 | Soil | DX/F, PSD, TOC |
| L1610-24 | 99VN-045 | Soil | DX/F, PSD, TOC |
| L1610-25 | 99VN-047 | Soil | DX/F, PSD, TOC |
| L1610-26 | 99VN-049 | Soil | DX/F, PSD, TOC |
| L1610-27 | 99VN-051 | Soil | DX/F, PSD, TOC |
| L1610-28 | 99VN-053 | Soil | DX/F, PSD, TOC |
| L1610-29 | 99VN-055 | Soil | DX/F, PSD, TOC |
| L1610-30 | 99VN-057 | Soil | DX/F, PSD, TOC |
| L1610-31 | 99VN-059 | Soil | DX/F, PSD, TOC |
| L1610-32 | 99VN-061 | Soil | DX/F, PSD, TOC |
| L1610-33 | 99VN-063 | Soil | DX/F, PSD, TOC |
| L1610-34 | 99VN-065 | Soil | DX/F, PSD, TOC |
| L1610-35 | 99VN-067 | Soil | DX/F, PSD, TOC |
| L1610-36 | 99VN-069 | Soil | DX/F, PSD, TOC |
| L1610-37 | 99VN-071 | Soil | DX/F, PSD, TOC |
| L1619-38 | 99VN-073 | Soil | DX/F, PSD, TOC |

¹ DX/F = Polychlorinated dioxins/furans
 OCP = Chlorinated pesticides and PCBs
 PSD = Particle Size Determination
 TOC = Total Organic Carbon

| AXYS ID | SAMPLE DESCRIPTION | MATRIX | ANALYSES¹ |
|----------------|--|---------------|-----------------------------|
| L1610-39 | 99VN-075 | Soil | DX/F, PSD, TOC |
| L1610-40 | 99VN-077 | Soil | DX/F, PSD, TOC |
| L1610-41 | 99VN-079 | Soil | DX/F, PSD, TOC |
| L1610-42 | 99VN-081 | Soil | DX/F, PSD, TOC |
| L1610-43 | 99VN-083 | Soil | DX/F, PSD, TOC |
| L1610-44 | 99VN-085 | Soil | DX/F, PSD, TOC |
| L1610-45 | 99VN-087 | Soil | DX/F, PSD, TOC |
| L1610-46 | 99VN-089 | Soil | DX/F, PSD, TOC |
| L1610-47 | 99VN-091 | Soil | DX/F, PSD, TOC |
| L1825-1 | 99VN-278 | Tissue | DX/F |
| L1825-2 | 99VN-276 | Tissue | DX/F |
| L1825-3 | 99VN-281 | Tissue | DX/F |
| L1825-8 | 99VN-451 | Tissue | DX/F |
| L1825-16 | 99VN-223 | Tissue | DX/F |
| L1825-19 | 99VN-151 | Tissue | DX/F |
| L1825-20 | 99VN-284 | Tissue | DX/F |
| L1825-24 | 99VN-124 | Tissue | DX/F |
| L1825-25 | 99VN-499 | Tissue | DX/F |
| L1825-26 | 99VN-329 | Tissue | DX/F |
| L1825-27 | 99VN-355 | Tissue | DX/F |
| L1825-28 | 99VN-482 | Tissue | DX/F |
| L1825-29 | 99VN-694 | Tissue | DX/F |
| L1825-30 | 99VN-690 | Tissue | DX/F |
| L1825-34 | 99VN-332 | Tissue | DX/F |
| L1825-35 | Composite of 99VN-314 / 317 | Tissue | DX/F |
| L1825-36 | Composite of 99VN-438 / 447 | Tissue | DX/F |
| L1825-37 | Composite of 99VN-380 / 386 | Tissue | DX/F |
| L1825-38 | Composite of 99VN-395 / 391 | Tissue | DX/F |
| L1825-39 | Composite of 99VN-186 / 199 / 203 | Tissue | DX/F |
| L1825-40 | Composite of 99VN-135 / 131 | Tissue | DX/F |
| L1825-41 | Composite of 99VN-245 / 250 / 254 | Tissue | DX/F |
| L1825-42 | Composite of 99VN-272 / 275 / 433 | Tissue | DX/F |
| L1935-1 | COMP. #1 Composite of 41 individual samples | Blood | DX/F |
| L1935-2 | COMP. #2 Composite of 44 individual samples | Blood | DX/F |
| L1935-3 | COMP. #3 Composite of 30 individual samples | Blood | DX/F |
| L1935-4 | COMP. #4 Composite of 48 individual samples | Blood | DX/F |
| L1935-5 | COMP. #5 Composite of 37 individual samples | Blood | DX/F |
| L1935-6 | COMP. #6 Composite of 27 individual samples | Blood | DX/F |
| L1935-7 | COMP. #7 Composite of 40 individual samples | Blood | DX/F |
| L1935-8 | COMP. #8 Composite of 37 individual samples | Blood | DX/F |
| L1935-9 | COMP. #9 Composite of 27 individual samples | Blood | DX/F |
| L1935-10 | COMP. #10 Composite of 29 individual samples | Blood | DX/F |
| L1935-11 | COMP. #11 Composite of 33 individual samples | Blood | DX/F |
| L1935-12 | COMP. #12 Composite of 31 individual samples | Blood | DX/F |
| L1935-13 | COMP. #13 Composite of 25 individual samples | Blood | DX/F |

| AXYS ID | SAMPLE DESCRIPTION | MATRIX | ANALYSES |
|----------------|---|---------------|-----------------|
| L1935-14 | COMP. #14 Composite of 37 individual samples | Blood | DX/F |
| L1935-15 | COMP. #15 Composite of 27 individual samples | Blood | DX/F |
| L1935-16 | COMP. #16 Composite of 43 individual samples | Blood | DX/F |
| | | | |
| L1936-1 | 99VN629 | Milk | DX/F |
| L1936-13 | 99VN648 | Milk | DX/F |
| L1936-3 | 99VN655 | Milk | DX/F |
| L1936-4 | 99VN649 | Milk | DX/F |
| L1936-5 | 99VN603 | Milk | DX/F |
| L1936-6 | 99VN608 | Milk | DX/F |
| L1936-7 | 99VN609 | Milk | DX/F |
| L1936-8 | 99VN625 | Milk | DX/F |
| L1936-9 | 99VN666 | Milk | DX/F |
| L1936-10 | 99VN667 | Milk | DX/F |
| L1936-11 | 99VN678 | Milk | DX/F |
| L1936-12 | 99VN686 | Milk | DX/F |
| | | | |
| L1991-1 | 99VN-434 | Tissue | DX/F |
| | | | |
| L2043-2 | 99VN579 | Milk | DX/F |
| L2043-8 | 99VN586 | Milk | DX/F |
| L2043-9 | 99VN592 | Milk | DX/F |
| L2043-10 | 99VN594 | Milk | DX/F |
| L2043-39 | 99VN628 | Milk | DX/F |
| | | | |
| L2044-1 | COMPOSITE # 1 99VN 578-82 / 584-86 / 592/ 594 | Milk | OCP |
| L2044-2 | COMPOSITE # 2 99VN 610-13 / 615 / 616/ 618-21 | Milk | OCP |
| L2044-3 | COMPOSITE # 3 99VN 630 / 635 / 639 / 640 / 643 / 653 / 654 / 656 / 652 / 660 | Milk | OCP |
| L2044-4 | COMPOSITE # 4 99VN 663 / 664 / 668 / 671 / 676 / 699 / 680-83 | Milk | OCP |
| L2044-5 | 99VN443 | Tissue | DX/F |
| L2044-6 | 99VN163 | Tissue | DX/F |
| L2044-7 | 99VN169 | Tissue | DX/F |
| L2044-8 | 99VN325 | Tissue | DX/F |
| | | | |
| L2072-4 | COMPOSITE #1 99VN 494 / 495 / 496 | Oil | DX/F, OCP |
| | | | |
| L2111-1 | VACUTAINER PROOF | | DX/F |

Tissue Samples

Tissue samples were homogenized using a Virtis blender. A separate subsample was taken for percent moisture determination. Tissue samples were analyzed as individual samples, however some composite samples were also prepared and analyzed (L1825-35 through -42). Composite samples were prepared by combining an equal amount of each sample in the composite in a single jar and homogenizing by hand stirring. In addition, three cooking oils (L2072-1, -2, and -3) were received. A single composite sample (L2072-4) was made by combining 15 mL of each oil. The samples and amount of sample to be included in each composite were designated by Hatfield. Prior to extraction, samples were thawed and homogenized by hand stirring.

Blood Samples

Axys received 556 human blood samples (L1934-1 through -556). Prior to analysis, these samples were combined to make 16 composite samples. Hatfield designated the number and identification of samples to be used in making each composite. Each composite was prepared by transferring one-half the volume of each individual sample in the composite to a clean, baked, jar (100 mL). The remainder of the individual samples was saved as backup. Each composite sample was assigned a new Axys ID number (L1935-1 through -16). In addition one blood sample, L1935-17, was received and analyzed as an individual sample. Prior to analysis the samples were thawed and homogenized by shaking.

Milk Samples

Of the human milk samples received, those requiring polychlorinated dioxin/furan analysis were analyzed as individual samples. Composite samples were prepared for PCB/pesticide analysis. Each composite sample (L2044-1 through -4) was prepared by pipetting 5 mL from each of 10 individual samples into a single EPA certified jar. The number of samples and identification of each sample in the composite were designated by Hatfield. Prior to analysis the samples were thawed and homogenized by shaking.

An additional sample, (L2111-1) was analyzed for polychlorinated dioxins and furans. This sample was a proof of a set of vacutainers sent to Axys by Hatfield.

The thawing, homogenization, moisture determination and extraction procedures were all conducted in a fumehood equipped with a HEPA filter. Once the procedures were complete, the fumehood and glassware were washed with a phenol-based disinfectant soap.

In addition, analysts wore disposable protective clothing and plastic gloves, which were autoclaved after use. Residual extracted sample and spent reagents were also autoclaved. These materials were stored at Axys until disposal by Agriculture Canada.

3. ANALYTICAL METHODS

3.1 Analysis of Polychlorinated Dibenzodioxins and Dibenzofurans

Complete descriptions of the analytical method used are presented in Appendix I.

Each sample was spiked with an aliquot of surrogate standard solution containing nine ¹³C-labelled dioxin and furan congeners. Soil samples and oil samples were soxhlet extracted. Tissue samples were ground with sodium sulphate and packed into a glass column which was eluted with solvent. Blood samples and milk samples were liquid/liquid extracted by shaking with solvent. Extracts were subject to a series of chromatographic cleanup steps prior to analysis by high resolution gas chromatography with high resolution mass spectrometric detection (HRGC/HRMS).

Gravimetric moisture determination was conducted on sediment and tissue samples. Tissue extracts were subsampled for percent lipid determination.

3.2 Chlorinated Pesticides and PCBs

Each sample was spiked with an aliquot of surrogate standard solution containing eight ¹³C-labelled pesticides and congeners and one perdeuterated pesticide. Tissue samples (including cooking oil) were ground with sodium sulphate and packed into a glass column, which was eluted with solvent. Milk samples were solvent extracted. Each extract was fractionated on a Florisil column. One fraction was analyzed for PCBs and pesticides by gas chromatography with mass spectrometric detection (GC/MS). A second fraction was analyzed for the most polar pesticides by gas chromatography with electron capture detection (GC/ECD).

4. ANALYTICAL RESULTS

Results were reported to Hatfield as the analyses were completed.

The original dioxin/furan analysis reports for all samples are presented in Appendix II. Percent moisture and percent lipid data are reported on the appropriate analysis reports.

The original PCB/pesticide reports are presented in Appendix III. Percent moisture and percent lipid data are reported on the appropriate analysis reports.

Results for the particle size distribution and total organic carbon analyses, subcontracted to Soilcon Laboratories, are presented in Appendix IV.

Analysis reports for QA/QC samples (procedural blanks and spiked matrices) are presented in Appendix V.

In each appendix, analysis reports are arranged by matrix type, numerically by Axys' ID numbers.

In the preparation of this report, some minor reporting errors were noted. These errors have been corrected and the revised analysis reports are included in this final report. Revisions were made to the analysis reports for samples L1825-37R (1,2,3,7,8,9 H₆CDF changed from NDR to ND), L1825-41 (TEQs changed to 2 significant figures), L2072-4 (revised method number), L1935-1L (revised SDL for T₄CDD), and DX-T-SPM 1269 (expected values revised) Spike WG1919-2 was reported twice. Only one report is included in Appendix V. In addition, the data for the spike matrix samples DX-T-SPM 1269 and WG 1918-2i were reported twice. In each case, one of the analysis reports had incorrect values for the percent recoveries. The correct analysis reports only are included in this final report.

All concentrations have been corrected based on the percent recovery of the surrogate standard². Concentrations are reported on a dry weight basis for soil, a wet weight basis for tissue and both a wet weight and lipid weight basis for blood and milk.

5. QUALITY ASSURANCE/QUALITY CONTROL

Samples were worked up in batches with accompanying QC samples. Each batch progressed from sample workup through instrumental analysis and onto data interpretation and final reports as a unit. The sample results were reviewed and evaluated in relation to the QA/QC samples worked up at the same time.

² Heptachlor epoxide, dieldrin, endrin and methoxychlor are quantified against the recovery standard ¹³C-PCB 153 and are not recovery corrected.

The composition of each batch of samples analyzed is detailed in a Batch Summary presented in Appendix VI. A procedural blank and reference sample were usually analyzed with each batch of samples.

5.1 Procedural Blanks

Overall, procedural blanks demonstrated non-detectable or low background levels of target compounds. However low background levels in the blank may be significant and should be considered when interpreting data from low level samples. It should be noted that the procedural blank analyzed with sample L2111-1 was destroyed during processing and the data for the blank are not reported.

5.2 Duplicates

Results for duplicate analyses are reported along with the sample analysis results. Generally, agreement within duplicates satisfied Axys' criterion of $\pm(20\%$ of the mean + Detection Limit). At least 10% of the soil and tissue samples were analyzed in duplicate. Due to insufficient sample, duplicate analysis was not performed on milk or blood samples.

5.3 Surrogate Standard Recoveries

The recovery of each surrogate standard was monitored by comparing its response to that of the recovery standard added just prior to instrumental analysis. The calculation of percent recovery is explained in Section 6.

Surrogate standard recoveries for each sample are presented along with the sample data, on each analysis report. The percent recoveries reported for most of the surrogates satisfied Axys' quality control standards criterion that they must be within an established acceptable range. Normally samples with low recoveries are repeated. It was not possible to calculate the percent surrogate recovery of $^{13}\text{C-p,p'-DDE}$ and $^{13}\text{C-p,p'-DDT}$ due to interference from a high concentration target compound.

5.4 Laboratory Reference Samples

A "known" sample, a spiked in-house sample, was worked up with each batch of samples and used to demonstrate the accuracy of the data. Spiked samples were prepared at Axys by adding a solution of authentic target analytes into a weighed amount of in-house reference

material. The percent recovery of the target analytes generally fell within 70% - 130%, which meets Axys' criterion for acceptability.

5.5 Detection Limits

Detection limits were calculated on a sample-specific basis and are reported for each sample on the analysis report.

Detection limits were calculated using a minimum area based on the noise level in the chromatogram. The minimum area is the area of a peak with a height three times the maximum height of the noise. Only peaks with responses greater than three times the background noise level were quantified. The calculation of detection limits is described in Section 6.

6. CALCULATIONS

The isotope dilution method was used to quantify components in the samples. Consequently, the concentration of a component in a sample was calculated using the following equations.

$$Conc_i = \frac{A_i}{A_{si}} \times \frac{W_{si}}{W_i} \times \frac{1}{RRF_{i,si}}$$

where A_i = area of the analyte peak of interest to quantify
 A_{si} = area of labelled surrogate used to quantify i
 W_i = weight of sample taken for analysis
 W_{si} = weight of labelled surrogate added to sample
 $RRF_{i,si}$ = relative response factor of i to si as determined by daily runs of the calibration standard solution and defined as

$$\frac{A_i}{A_{si}} \times \frac{W_{si}}{W_i}$$

Detection limits were also calculated using the above equations with the minimum detectable peak area used for A_i . The minimum detectable peak area was calculated as three times the maximum noise in the chromatogram (height of noise x area/height ratio of a typical peak x 3).

Recoveries of internal standards were calculated by the internal standard method using the following equation:

$$\% \text{Recovery} = \frac{A_{si}}{A_{rs}} \times \frac{W_{rs}}{W_{si}} \times \frac{1}{RRF_{si,rs}} \times 100$$

where A_{si} and A_{rs} are the areas of the labelled surrogate and the recovery standard in the sample run and W_{rs} , W_{si} are the weights of recovery standard and labelled surrogate added to the sample. $RRF_{si,rs}$ is the relative response factor of the labelled surrogate to the recovery standard as determined by daily runs of the quantification solution and defined by

$$\frac{A_{si}}{A_{rs}} \times \frac{W_{rs}}{W_{si}}$$

Analytical Methods

ANALYSIS OF POLYCHLORINATED DIOXINS AND FURANS IN SOIL, TISSUE, HUMAN BLOOD, BREAST MILK AND VACUTAINERS

Summary

All samples were spiked with ¹³C-labelled surrogate standards (tetrachlorodioxin, tetrachlorofuran, pentachlorodioxin, pentachlorofuran, hexachlorodioxin, hexachlorofuran, heptachlorodioxin, heptachlorofuran, and octachlorodioxin) prior to analysis. Soil samples were soxhlet extracted. Tissue samples were extracted by eluting through a glass chromatographic column with solvent. Blood, milk and vacutainers were solvent extracted. All extracts were subject to a series of chromatographic cleanup steps prior to analysis for polychlorinated dibenzodioxins and dibenzofurans by high-resolution gas chromatography with high-resolution mass spectrometric detection (HRGC/HRMS).

1. EXTRACTION PROCEDURES

Soil Samples (DX-S-01/Ver. 2)

A subsample of soil was dried overnight at 105°C to determine moisture content.

An accurately weighed soil sample was dried by grinding with anhydrous sodium sulphate. The mixture was transferred to a soxhlet thimble and an aliquot of surrogate standard solution added. The soxhlet thimble was allowed to reflux for 16 hours with 80:20 toluene:acetone. The cooled extract was transferred to a separatory funnel and sequentially washed with potassium hydroxide solution, distilled water, concentrated sulphuric acid and distilled water. The organic layer was dried over anhydrous sodium sulphate, the solvent evaporated to dryness and the residue redissolved in hexane. Activated copper was added to the extract to remove sulphur. The extract was ready for chromatographic cleanup procedures.

Tissue Samples (DX-T-03/Ver. 2)

A subsample of tissue was dried overnight at 105°C to determine moisture content.

An accurately weighed tissue sample was dried by grinding with anhydrous sodium sulphate. The mixture was transferred to a glass chromatographic column containing 1:1 dichloromethane:hexane. An aliquot of surrogate standard solution was added to the column. The column was eluted with additional solvent. The eluate was subsampled for gravimetric lipid determination. The remaining extract was concentrated and eluted through a gel permeation column (to remove lipids and high molecular weight interferences) with 1:1 dichloromethane:hexane. The 150 - 300 mL fraction was collected and concentrated. The extract was ready for chromatographic cleanup procedures.

Blood Samples (DX-B-06/Ver. 1)

An accurately weighed blood sample was extracted by shaking for 30 minutes with a mixture of ethanol, hexane and saturated ammonium sulphate. The extraction step was repeated

using hexane. The organic layers were combined and washed twice with distilled water. The hexane extract was dried over anhydrous sodium sulphate, filtered, and the solvent evaporated to just dryness. The extract was redissolved in 1:1 dichloromethane:hexane and subsampled for gravimetric lipid determination. The remaining extract was concentrated and eluted through a gel permeation column (to remove lipids and high molecular weight interferences) with 1:1 dichloromethane:hexane. The 150 - 300 mL fraction was collected and concentrated. The extract was ready for chromatographic cleanup procedures.

Breast Milk Samples (DX-M-04/Ver. 3)

An accurately weighed breast milk sample was added to 2:1 acetone:hexane in a separatory funnel. An aliquot of surrogate standard was added and the mixture shaken. The extraction step was repeated by shaking with hexane. The organic layers were combined and washed with distilled water. The extract was dried over anhydrous sodium sulphate and concentrated. The extract was subsampled for gravimetric determination. The remaining extract was concentrated and eluted through a gel permeation column (to remove lipids and high molecular weight interferences) with 1:1 dichloromethane:hexane. The 150 - 300 mL fraction was collected and concentrated. The extract was ready for chromatographic cleanup procedures.

Vacutainer Proof (SOP LAB-2/Ver. 2607)

Dilute sodium chloride solution and a corn oil were added to 25 vacutainers. The containers were frozen, mixed by vortexing, and refrozen overnight. The solutions were combined and extracted three times with dichloromethane. The extract was dried over anhydrous sodium sulphate and an aliquot of surrogate standard solution added. The extract was concentrated.

The extract was eluted through a gel permeation column (to remove lipids and high molecular weight interferences) with 1:1 dichloromethane:hexane. The 150 - 300 mL fraction was collected and concentrated.

The extract was loaded onto a basic alumina column. The first fraction, eluted with hexane was discarded. The second fraction, eluted with 1:1 dichloromethane:hexane, was retained and concentrated. The extract was transferred to an autosampler vial, evaporated just to dryness and aliquots of recovery standards (¹³C-labelled 1,2,3,4-tetrachlorodibenzodioxin and 1,2,3,7,8,9-hexachlorodibenzodioxin) were added. The extract was ready for analysis by HRGC/MS.

2. CHROMATOGRAPHIC CLEANUP PROCEDURES

a) Silica Gel Column

Soil Extracts

The extract was transferred to a layered silica gel column (layers: AgNO₃ on silica, neutral, basic, neutral, acidic, neutral). Extracts were eluted with 2% dichloromethane:hexane. The eluate was concentrated. Activated copper was added to the extract to remove sulphur.

Tissue, Blood and Milk Extracts

The extract was transferred to a layered silica gel column (layers: neutral, basic, neutral, acidic, acidic). The column was eluted with 1:1 dichloromethane:hexane. The eluate was concentrated.

b) Alumina Column

The extract from the silica gel column was loaded onto a basic alumina column. The first fraction, eluted with hexane was discarded. The second fraction, eluted with 1:1 dichloromethane:hexane, was retained and concentrated.

c) Carbon/Celite Column

The extract from the alumina column was loaded onto a 4.5% carbon/Celite column. The column was eluted with 1:1 cyclohexane:dichloromethane (discard) followed by 1:1 ethylacetate:toluene (discard). The column was inverted and eluted with toluene (collected). The fraction was evaporated to near dryness and redissolved in hexane.

d) Alumina Column

The extract from the carbon/Celite column was loaded onto a basic alumina column. The first fraction, eluted with hexane was discarded. The second fraction eluted with 1:1 dichloromethane:hexane was retained and concentrated.

e) Preparation for GC/MS Analysis

The extract was transferred to an autosampler vial, evaporated just to dryness and aliquots of recovery standards (¹³C-labelled 1,2,3,4-tetrachlorodibenzodioxin and 1,2,3,7,8,9-hexachlorodibenzodioxin) were added. The extract was ready for analysis by HRGC/MS.

3. HIGH RESOLUTION GC/MS ANALYSIS

Polychlorinated dibenzodioxins (PCDD) and dibenzofurans (PCDF) were analyzed on an Ultima Autospec mass spectrometer equipped with a Hewlett Packard 5890 gas chromatograph, a DB-5 capillary chromatography column (60 m, 0.25 mm i.d. x 0.1 µm film thickness), a CTC autosampler and an Alpha workstation. The mass spectrometer was tuned daily to have a static mass resolution of 10,000 or greater. Data were acquired in the voltage selected ion recording mode (SIR) to enhance sensitivity. At least two ions were used to monitor each of the target analytes and ¹³C-labelled surrogate standards. Five additional ions were monitored to check for interference from chlorinated diphenyl ethers. The masses of the ions monitored for target analytes and surrogate standards are presented in Table 1.

4. QUANTITATION PROCEDURES

Concentrations of target analytes were calculated using the isotope dilution method of quantitation. PCDDs and PCDFs were quantified by comparing the area of the quantification

ion to that of the corresponding ¹³C-labelled surrogate standard and correcting for response factors. Response factors were determined daily using authentic PCDDS and PCDFs.

Concentrations of analytes were corrected based on the percent recovery of surrogate standards. Concentrations are reported in pg/g dry weight for soils and pg/g wet weight for tissues, and in pg/g wet weight and lipid weight for blood and milk samples.

Sample detection limits are reported for each target analyte, based on a minimum detectable area for that compound in the chromatogram.

A summary of the surrogates standards and the relative response factors (RRF) used in the quantitation procedure is presented in Table 1.

The instrumental conditions, analyte identification and quantification protocols for PCDDs/PCDFs, as described in Environment Canada Report EPS 1/RM/19, February 1992¹ were strictly adhered to.

REFERENCES

1. Environment Canada Reference Method EPS 1/RM/19, *Reference Method for the Determination of Polychlorinated Dibenzo-para-dioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) in Pulp and Paper Mill Effluents*, February 1992.

Table 1. Analyte Ions Monitored, Surrogates Used and RRF Determination for Dioxins/Furans by High Resolution GC/MS

| ANALYTE | Quantitation Ion (m/z) | Confirmation Ions (m/z) | SURROGATE | RRF Determined From |
|-------------------------------------|-------------------------------|--------------------------------|-------------------------------------|----------------------------|
| 2,3,7,8 T4CDD | 320 | 322 | 2,3,7,8 ¹³ C-T4CDD | 2,3,7,8 T4CDD |
| 1,2,3,7,8 P5CDD | 354 | 356 | 1,2,3,7,8 ¹³ C-P5CDD | 1,2,3,7,8 P5CDD |
| 1,2,3,4,7,8 H6CDD | 390 | 392 | 1,2,3,6,7,8 ¹³ C-H6CDD | 1,2,3,4,7,8 H6CDD |
| 1,2,3,6,7,8 H6CDD | 390 | 392 | 1,2,3,6,7,8 ¹³ C-H6CDD | 1,2,3,6,7,8 H6CDD |
| 1,2,3,7,8,9 H6CDD | 390 | 392 | 1,2,3,6,7,8 ¹³ C-H6CDD | 1,2,3,7,8,9 H6CDD |
| 1,2,3,4,6,7,8 H7CDD | 424 | 426 | 1,2,3,4,6,7,8 ¹³ C-H7CDD | 1,2,3,4,6,7,8 H7CDD |
| O8CDD | 458 | 460 | ¹³ C-O8CDD | O8CDD |
| 2,3,7,8 T4CDF | 304 | 306 | 2,3,7,8 ¹³ C-T4CDF | 2,3,7,8 T4CDF |
| 1,2,3,7,8 P5CDF | 340 | 342 | 1,2,3,7,8 ¹³ C-P5CDF | 1,2,3,7,8 P5CDF |
| 2,3,4,7,8 P5CDF | 340 | 342 | 1,2,3,7,8 ¹³ C-P5CDF | 2,3,4,7,8 P5CDF |
| 1,2,3,4,7,8 H6CDF | 374 | 376 | 1,2,3,4,7,8 ¹³ C-H6DCF | 1,2,3,4,7,8 H6CDF |
| 1,2,3,6,7,8 H6CDF | 374 | 376 | 1,2,3,4,7,8 ¹³ C-H6DCF | 1,2,3,6,7,8 H6CDF |
| 2,3,4,6,7,8 H6CDF | 374 | 376 | 1,2,3,4,7,8 ¹³ C-H6DCF | 2,3,4,6,7,8 H6CDF |
| 1,2,3,7,8,9 H6CDF | 374 | 376 | 1,2,3,4,7,8 ¹³ C-H6DCF | 1,2,3,7,8,9 H6CDF |
| 1,2,3,4,6,7,8 H7CDF | 408 | 410 | 1,2,3,4,6,7,8 ¹³ C-H7CDF | 1,2,3,4,6,7,8 H7CDF |
| 1,2,3,4,7,8,9 H7CDF | 408 | 410 | 1,2,3,4,6,7,8 ¹³ C-H7CDF | 1,2,3,4,7,8,9 H7CDF |
| O8CDF | 442 | 444 | ¹³ C-O8CDD | O8CDF |
| LABELLED SURROGATE | Quantitation Ion (m/z) | Confirmation Ions (m/z) | SURROGATE | |
| 2,3,7,8 ¹³ C-T4CDF | 316 | 318 | 1,2,3,4 ¹³ C-TCDD | |
| 2,3,7,8 ¹³ C-T4CDD | 332 | 334 | 1,2,3,4 ¹³ C-TCDD | |
| 1,2,3,7,8 ¹³ C-P5CDF | 352 | 354 | 1,2,3,4 ¹³ C-TCDD | |
| 1,2,3,7,8 ¹³ C-P5CDD | 366 | 368 | 1,2,3,4 ¹³ C-TCDD | |
| 1,2,3,4,7,8 ¹³ C-H6CDF | 384 | 386 | 1,2,3,7,8,9 ¹³ C-H6CDD | |
| 1,2,3,6,7,8 ¹³ C-H6CDD | 402 | 404 | 1,2,3,7,8,9 ¹³ C-H6CDD | |
| 1,2,3,4,6,7,8 ¹³ C-H7CDF | 418 | 420 | 1,2,3,7,8,9 ¹³ C-H6CDD | |
| 1,2,3,4,6,7,8 ¹³ C-H7CDD | 436 | 438 | 1,2,3,7,8,9 ¹³ C-H6CDD | |
| ¹³ C-O8CDD | 470 | 472 | 1,2,3,7,8,9 ¹³ C-H6CDD | |
| RECOVERY STANDARDS | | | | |
| 1,2,3,4 ¹³ C-T4CDD | 332 | 334 | | |
| 1,2,3,7,8,9 ¹³ C-H6CDD | 402 | 404 | | |

ANALYSIS OF PCBs AND CHLORINATED PESTICIDES IN TISSUE AND BREAST MILK SAMPLES

Summary

All samples were spiked with a suite of ¹³C-labelled surrogate standards (hexachlorobenzene, gamma-HCH, p,p'-DDE, p,p'-DDT, PCB 101, PCB 180, and PCB 209) and per-deuterated alpha-endosulphan. Tissue samples were extracted by elution through a glass column with solvent. Breast milk samples were solvent extracted. The final extracts were separated into two fractions on a Florisil column. One fraction was analyzed by high-resolution gas chromatography with detection by either quadrupole for PCBs (as Aroclors) and non-polar and moderately polar chlorinated pesticides. A second fraction was analyzed for the most polar chlorinated pesticides by gas chromatography with electron capture detection (GC/ECD).

1. EXTRACTION PROCEDURES

Tissue and Oil Samples (Method CL-T-03/Ver. 3)

A subsample of tissue was oven dried at 105°C for the determination of moisture content.

A weighed subsample of tissue was dried by grinding with anhydrous sodium sulphate. The mixture was transferred to a soxhlet thimble and an aliquot of surrogate standard was added. The soxhlet thimble was allowed to reflux for three hours with dichloromethane. The cooled extract was concentrated and subsampled for gravimetric lipid determination. The remaining extract was eluted through a gel permeation column (to remove lipids and high molecular weight interferences) with 1:1 dichloromethane:hexane. The 150 - 300 mL fraction was collected and concentrated. The extract was ready for chromatographic cleanup procedures.

Breast Milk Samples (Method CL-M-07/Ver. 2)

An aliquot of surrogate standard solution was added to an accurately weighed breast milk sample. The solution was extracted by shaking with 2:1 acetone: hexane for 2 minutes. The aqueous phase was subsequently extracted with by shaking with hexane. The organic layers were combined and washed with distilled water. The extract was dried over anhydrous sodium sulphate, concentrated and subsampled for gravimetric lipid determination. The remaining extract was eluted through a gel permeation column (to remove lipids and high molecular weight interferences) with 1:1 dichloromethane:hexane. The 150 - 300 mL fraction was collected and concentrated. The extract was ready for chromatographic cleanup procedures.

2. CHROMATOGRAPHIC CLEANUP PROCEDURES

The extract was applied to a Florisil (partially deactivated) column. The column was eluted with hexane (F1) followed by 15:85 dichloromethane:hexane (F2). The eluates were combined (F1+F2). The column was eluted with 1:1 dichloromethane:hexane (F3). Each fraction was concentrated.

The F1+F2 fraction was transferred to an autosampler vial and an aliquot of recovery standard

(¹³C-labelled PCB 153) added. The autosampler vial was capped ready for analysis of non-polar and moderately polar chlorinated pesticides by GC/MS.

The F3 fraction was transferred to an autosampler vial and an aliquot of recovery standard (¹³C-labelled PCB 153) added. The autosampler vial was capped ready for GC/ECD analysis of polar chlorinated pesticides.

3. INSTRUMENTAL ANALYSIS

GC/MS Analysis

The GC/MS analysis of fraction (F1+F2) for PCBs and chlorinated pesticides was carried out using a Finnigan INCOS 50 mass spectrometer equipped with a Varian 3400 GC, a CTC autosampler and a Prolab/Enviroquant data system for acquisition and quantitation. The mass spectrometer was operated at unit mass resolution in the Multiple Ion Detection (MID) mode to enhance sensitivity. Two characteristic ions for each target analyte and surrogate standard were monitored. The ions monitored for each analyte and standard are presented in Table 1.

Chromatographic separation was achieved with a DB-5 capillary chromatography column (60 m, 0.25 mm i.d. x 0.1 µm film thickness). A splitless/split injection sequence was used.

GC/ECD Analysis

Chlorinated pesticides in fraction F3 were analyzed by GC/ECD using a Hewlett Packard 5890 gas chromatograph, with a ⁶³Ni electron capture detector and a DB5 Durabond Fused Silica capillary column (60 m x 0.25 mm, 0.10 µm film).

4. QUANTITATION PROCEDURES

Concentrations of target analytes were calculated using the isotope dilution method of quantitation. Compounds were quantified by comparing the area of the quantification ion to that of the corresponding ¹³C-labelled standard and correcting for response factors. Response factors were determined daily using authentic pesticides.

With the exception of some F3 pesticides¹ concentrations of analytes have been corrected based on the percent recovery of surrogate standards. Concentrations have been reported in ng/g wet weight for tissues and ng/g wet weight and lipid weight for breast milk samples.

¹PCBs are reported as concentrations of Aroclor 1242, 1254, and 1260. Each Aroclor is quantified by summing the peak areas of a suite of congeners characteristic of the Aroclor formulation. The summed area is converted to a concentration using RRFs determined from a 1:1:1 mixture of Aroclor1242:1254:1260.

Sample detection limits are reported for each target analyte, based on a minimum detectable area

¹ Heptachlor epoxide, dieldrin, endrin and methoxychlor are quantified against ¹³C-PCB 153, added just prior to instrumental analysis, and concentrations are not recovery corrected.

for that compound in the chromatogram.

A summary of the relative response factors used (RRF) and surrogates standards used in the quantitation procedures are summarized in Table 1.

Table. 1

**Analyte Ions Monitored, Surrogates Used
and RRF Determination for Pesticides
by Low Resolution GC/MS and ECD**

| ANALYTE | Quantitation Ion (m/z) | Confirmation Ions (m/z) | Surrogate | RRF Determined From |
|----------------------------|-----------------------------------|------------------------------------|--|--------------------------------|
| F1/F2 Fraction | | | | |
| HCB | 284 | 286 | ¹³ C-HCB | HCB |
| alpha-HCH | 219 | 217 | ¹³ C-gamma HCH | alpha-HCH |
| beta-HCH | 219 | 217 | ¹³ C-gamma HCH | beta-HCH |
| gamma-HCH | 219 | 217 | ¹³ C-gamma HCH | gamma-HCH |
| Heptachlor | 337 | 272/270 | ¹³ C-PCB 101 | Heptachlor |
| Aldrin | 263 | 265 | ¹³ C-PCB 101 | Aldrin |
| Oxychlorane | 185 | 115/263 | ¹³ C-PCB 101 | Oxychlorane |
| trans-chlordane | 373 | 375 | ¹³ C-PCB 101 | trans-chlordane |
| cis-chlordane | 373 | 375 | ¹³ C-PCB 101 | cis-chlordane |
| trans-nonachlor | 409 | 411 | ¹³ C-PCB 101 | trans-nonachlor |
| cis-nonachlor | 409 | 411 | ¹³ C-PCB 101 | cis-nonachlor |
| o,p-DDE | 246 | 248 | ¹³ C-p,p-DDE | o,p-DDE |
| p,p-DDE | 246 | 248 | ¹³ C-p,p-DDE | p,p-DDE |
| o,p-DDD | 235 | 237 | ¹³ C-PCB 101 | o,p-DDD |
| p,p-DDD | 235 | 237 | ¹³ C-PCB 101 | p,p-DDD |
| o,p-DDT | 235 | 237 | ¹³ C-p,p-DDT | o,p-DDT |
| p,p-DDT | 235 | 237 | ¹³ C-p,p-DDT | p,p-DDT |
| Mirex | 272 | 270 | ¹³ C-PCB 101 | Mirex |
| F3 Fraction | | | | |
| Heptachlor Epoxide | N/A | N/A | ¹³ C-PCB 153 | Heptachlor Epoxide |
| Alpha-Endosulphan (I) | N/A | N/A | d4-alpha-Endosulphan | alpha-Endosulphan (I) |
| Dieldrin | N/A | N/A | ¹³ C-PCB 153 | Dieldrin |
| Endrin | N/A | N/A | ¹³ C-PCB 153 | Endrin |
| Methoxychlor | N/A | N/A | ¹³ C-PCB 153 | Methoxychlor |
| LABELLED SURROGATES | Quantitation Ion (m/z) | Confirmation Ions (m/z) | Recovery Calculated Against | |
| ¹³ C-HCB | 292 | 294/296 | ¹³ C-PCB 153 | |
| ¹³ C-gamma-HCH | 225 | 223 | ¹³ C-PCB 153 | |
| ¹³ C-PCB 101 | 338 | 340 | ¹³ C-PCB 153 | |
| ¹³ C-p,p-DDE | 330 | 328 | ¹³ C-PCB 153 | |
| ¹³ C-p,p-DDT | 247 | 249 | ¹³ C-PCB 153 | |
| ¹³ C-PCB 180 | 406 | 408 | ¹³ C-PCB 153 | |
| ¹³ C-PCB 209 | 512 | 510 | ¹³ C-PCB 153 | |
| d4-alpha-Endosulphan | N/A | N/A | ¹³ C-PCB 153 | |
| RECOVERY STANDARDS | | | | |
| ¹³ C-PCB 153 | 372 | 376 | | |

**AXYS ANALYTICAL SERVICES LTD.
QUALITY ASSURANCE/QUALITY CONTROL SUMMARY**

AXYS' QA/QC procedures are formally documented in a quality manual, "QA/QC Policies and Procedures Manual, Revision 5, June, 1999". This document describes quality assurance policies and procedures related to sample receiving, sample analysis and data reporting as well as quality control measures and procedures for review of QA/QC procedures and specifications, ensuring continued excellence in the analyses conducted by Axys.

All staff is thoroughly instructed in AXYS' overall QA/QC policies with emphasis on aspects directly related to their particular speciality. The staff work as an integrated team to ensure quality analytical results with key individuals responsible for review of the accumulated QA/QC information pertaining to each sample.

The basis of Axys' QA/QC plan is the batch method. Each workup batch is analyzed with quality control samples such as procedural blanks, reference materials, spiked matrices and duplicate samples. The batch goes from sample workup through instrumentation as a unit, and then on to data interpretation and formal report generation. The sample results are reviewed and evaluated in relation to the QA/QC samples worked up with the batch.

A summary of the key points of AXYS' QA/QC protocols is presented below.

1. QA/QC Samples

Batch Size - Analyses are carried out in batches. Each batch consists of a maximum of nine samples plus QC samples (usually a spiked sample or reference material, one duplicate and a procedural blank).

Blanks - One procedural blank is analyzed with each batch of samples.

Duplicates - When specified by the analytical method, samples (10%) are analyzed in duplicate at no extra cost to the client. Results for duplicates are presented along with the analysis results.

Reference Samples- Certified reference materials or spiked samples are analyzed with each batch and are relied on to demonstrate the accuracy of the data. Reported results must agree with expected results to within acceptable limits.

Surrogates - Chemically labelled analogues of the target compound are added to each sample prior to analysis. Whenever possible, a complete suite of labelled targets is employed.

2. Instrumental Analysis

Instrument Linearity - Quantification linearity of the analytical instruments (GC/MS, HRGC/MS, GC/ECD) is periodically verified by a multi-point calibration.

Daily Calibration - Instrument mass range is regularly calibrated. Relative response factors (RRFs) (native/surrogate) are determined by a single point calibration every twelve hours (beginning and end of run). RRFs determined at beginning and end of the analysis of a sample suite must agree to within 15% (RSD).

Column Carryover - A solvent blank is run after each calibration standard or more often as needed to ensure that there is no carry over from one GC/MS run to another.

Window Standard - For some analyses a cocktail or "window-defining" mixture is run periodically to define the window during which a group of compounds is expected.

3. Data Reporting

Surrogate Recoveries – The percent recoveries of surrogate or internal standards are reported with each sample result and are required to meet the acceptance criteria established for the method. Percent recoveries are usually well within the acceptable range. If recoveries are outside the range, the analysis is repeated.

Concentrations - Concentrations of target analytes are calculated using the internal standard method of quantification and are corrected based on the percent recovery of surrogate standards.

Detection Limits - Detection Limits are monitored and reported on a sample-specific basis. The detection limit is calculated as the concentration corresponding to the area reject. The area reject, determined from the ion chromatogram is the area of a peak with height three times the maximum height of the noise. Only peaks with responses greater than three times the background noise level are quantified.

Particle Size Distribution

Soilcon Laboratories under subcontract to Axys carried out particle size distribution (PSD) on soils. PSD was determined by the "Pipette Method", in which the percent gravel, sand, silt and clay was determined by a combination of dry sieving, wet sieving, and pipetting techniques. The method was performed in accordance with Method 15-4 in Methods of Soil Analysis, Part 1 – Physical and Mineralogical Methods (Gee and Bauder, 1986).

Total Organic Carbon Analysis

Soilcon Laboratories under subcontract to Axys carried out total organic carbon (TOC) analysis of soils. All samples were pretreated for carbonates. Analysis was performed by combustion of the sample in an O₂ environment using an automated resistance furnace and subsequent quantification of CO₂ using a Leco analyzer. Results are reported on a dry weight basis. The method was performed according to Methods of Soil Analysis, Part 3 Chemical Methods (Nelson and Sommers 1996).

Section 1

**Dioxin/Furan Analysis Reports:
Soil**

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

| | |
|--|----------------------------------|
| CLIENT SAMPLE I.D.: 99 VN-001 | AXYS FILE: L1610-1 |
| CLIENT: Hatfield Consultants Ltd. | DATE: 20-Apr-1999 |
| CLIENT NO.: 2607 | METHOD NO.: DX-S-01/Ver.2 |
| SAMPLE TYPE: Sediment | INSTRUMENT: GC-HRMS |
| SAMPLE SIZE: 8.03 g dry | CONCENTRATION IN: pg/g |
| % MOISTURE: 22 | |

**A So Special Forces Base
Soil
North West**

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 220 | 0.1 | T4CDF - Total | 11 | 0.1 |
| 2,3,7,8 | 220 | 0.1 | 2,3,7,8 | 3.7 | 0.1 |
| P5CDD - Total | 8.7 | 0.1 | P5CDF - Total | 9.3 | 0.1 |
| 1,2,3,7,8 | 1.3 | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | 0.6 | 0.1 |
| H6CDD - Total | 17 | 0.2 | H6CDF - Total | 7.7 | 0.2 |
| 1,2,3,4,7,8 | 0.7 | 0.2 | 1,2,3,4,7,8 | 0.8 | 0.2 |
| 1,2,3,6,7,8 | 1.1 | 0.2 | 1,2,3,6,7,8 | 0.7 | 0.2 |
| 1,2,3,7,8,9 | 1.5 | 0.2 | 2,3,4,6,7,8 | 0.6 | 0.2 |
| | | | 1,2,3,7,8,9 | 0.3 | 0.2 |
| H7CDD - Total | 32 | 0.2 | H7CDF - Total | 11 | 0.2 |
| 1,2,3,4,6,7,8 | 17 | 0.2 | 1,2,3,4,6,7,8 | 4.3 | 0.2 |
| | | | 1,2,3,4,7,8,9 | 0.6 | 0.2 |
| O8CDD - Total | 330 | 1.9 | O8CDF - Total | 11 | 0.3 |

Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 70 |
| 13C-T4CDD | 71 |
| 13C-P5CDF | 68 |
| 13C-P5CDD | 73 |
| 13C-H6CDF | 74 |
| 13C-H6CDD | 72 |
| 13C-H7CDF | 69 |
| 13C-H7CDD | 64 |
| 13C-O8CDD | 72 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

2,3,7,8 - TCDD TEQs (ND=1/2 DL) = 220 pg/g
 2,3,7,8 - TCDD TEQs (ND=0) = 220 pg/g

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Hamilton
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99 VN-003

AXYS FILE: L1610-2

CLIENT: Hatfield Consultants Ltd.

DATE: 20-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 8.16 g dry

**A So Special Forces Base
Soil
North Centre**

INSTRUMENT: GC-HRMS

% MOISTURE: 20

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 370 | 0.1 | T4CDF - Total | 25 | 0.1 |
| 2,3,7,8 | 360 | 0.1 | 2,3,7,8 | 11 | 0.1 |
| P5CDD - Total | 13 | 0.1 | P5CDF - Total | 37 | 0.1 |
| 1,2,3,7,8 | 2.5 | 0.1 | 1,2,3,7,8 | 0.4 | 0.1 |
| | | | 2,3,4,7,8 | 0.7 | 0.1 |
| H6CDD - Total | 16 | 0.2 | H6CDF - Total | 3.9 | 0.2 |
| 1,2,3,4,7,8 | 0.5 | 0.2 | 1,2,3,4,7,8 | 0.4 | 0.2 |
| 1,2,3,6,7,8 | 0.5 | 0.2 | 1,2,3,6,7,8 | 0.3 | 0.2 |
| 1,2,3,7,8,9 | 1.3 | 0.2 | 2,3,4,6,7,8 | 0.2 | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 16 | 0.2 | H7CDF - Total | 4.2 | 0.3 |
| 1,2,3,4,6,7,8 | 7.3 | 0.2 | 1,2,3,4,6,7,8 | 1.7 | 0.3 |
| | | | 1,2,3,4,7,8,9 | ND | 0.3 |
| O8CDD - Total | 310 | 7.9 | O8CDF - Total | 4.6 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 74 |
| 13C-T4CDD | 75 |
| 13C-P5CDF | 71 |
| 13C-P5CDD | 81 |
| 13C-H6CDF | 78 |
| 13C-H6CDD | 77 |
| 13C-H7CDF | 71 |
| 13C-H7CDD | 67 |
| 13C-O8CDD | 77 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 360 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 360 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Lamulda
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-004

AXYS FILE: L1610-3

CLIENT: Hatfield Consultants Ltd.

DATE: 20-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 8.22 g dry

**A So Special Forces Base
Soil
North Centre**

INSTRUMENT: GC-HRMS

% MOISTURE: 19

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 260 | 0.1 | T4CDF - Total | 17 | 0.1 |
| 2,3,7,8 | 260 | 0.1 | 2,3,7,8 | 7.1 | 0.1 |
| P5CDD - Total | 9.2 | 0.1 | P5CDF - Total | 25 | 0.1 |
| 1,2,3,7,8 | 1.6 | 0.1 | 1,2,3,7,8 | 0.3 | 0.1 |
| | | | 2,3,4,7,8 | 0.5 | 0.1 |
| H6CDD - Total | 11 | 0.2 | H6CDF - Total | 3.1 | 0.2 |
| 1,2,3,4,7,8 | 0.5 | 0.2 | 1,2,3,4,7,8 | 0.3 | 0.2 |
| 1,2,3,6,7,8 | 0.5 | 0.2 | 1,2,3,6,7,8 | 0.2 | 0.2 |
| 1,2,3,7,8,9 | 0.9 | 0.2 | 2,3,4,6,7,8 | 0.2 | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 13 | 0.2 | H7CDF - Total | 4.1 | 0.3 |
| 1,2,3,4,6,7,8 | 6.4 | 0.2 | 1,2,3,4,6,7,8 | 1.6 | 0.3 |
| | | | 1,2,3,4,7,8,9 | ND | 0.3 |
| O8CDD - Total | 280 | 9.7 | O8CDF - Total | 3.8 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 83 |
| 13C-T4CDD | 84 |
| 13C-P5CDF | 76 |
| 13C-P5CDD | 82 |
| 13C-H6CDF | 83 |
| 13C-H6CDD | 82 |
| 13C-H7CDF | 74 |
| 13C-H7CDD | 79 |
| 13C-O8CDD | 76 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 260 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 260 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Hamilton
 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001

CLIENT SAMPLE I.D.: 99VN-006

AXYS FILE: L1610-4

CLIENT: Hatfield Consultants Ltd.

DATE: 20-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 7.44 g dry

**A So Special Forces Base
Soil
North East**

INSTRUMENT: GC-HRMS

% MOISTURE: 26

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 280 | 0.1 | T4CDF - Total | 35 | 0.1 |
| 2,3,7,8 | 260 | 0.1 | 2,3,7,8 | 20 | 0.1 |
| P5CDD - Total | 23 | 0.1 | P5CDF - Total | 20 | 0.1 |
| 1,2,3,7,8 | 1.7 | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | 0.5 | 0.1 |
| H6CDD - Total | 22 | 0.2 | H6CDF - Total | 4.4 | 0.2 |
| 1,2,3,4,7,8 | 0.7 | 0.2 | 1,2,3,4,7,8 | 0.3 | 0.2 |
| 1,2,3,6,7,8 | 0.6 | 0.2 | 1,2,3,6,7,8 | 0.2 | 0.2 |
| 1,2,3,7,8,9 | 0.6 | 0.2 | 2,3,4,6,7,8 | 0.2 | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 10 | 0.2 | H7CDF - Total | 1.5 | 0.2 |
| 1,2,3,4,6,7,8 | 4.7 | 0.2 | 1,2,3,4,6,7,8 | 1.0 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 240 | 0.9 | O8CDF - Total | 1.2 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 77 |
| 13C-T4CDD | 78 |
| 13C-P5CDF | 76 |
| 13C-P5CDD | 79 |
| 13C-H6CDF | 78 |
| 13C-H6CDD | 76 |
| 13C-H7CDF | 70 |
| 13C-H7CDD | 74 |
| 13C-O8CDD | 79 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 260 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 260 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McNamilton
Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001

CLIENT SAMPLE I.D.: 99VN-008

AXYS FILE: L1610-5A

CLIENT: Hatfield Consultants Ltd.

DATE: 20-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 8.02 g dry

**A So Special Forces Base
Soil
Centre West**

INSTRUMENT: GC-HRMS

% MOISTURE: 21

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 36 | 0.1 | T4CDF - Total | 12 | 0.1 |
| 2,3,7,8 | 24 | 0.1 | 2,3,7,8 | 2.1 | 0.1 |
| P5CDD - Total | 28 | 0.1 | P5CDF - Total | 9.1 | 0.1 |
| 1,2,3,7,8 | 1.7 | 0.1 | 1,2,3,7,8 | 0.2 | 0.1 |
| | | | 2,3,4,7,8 | 0.3 | 0.1 |
| H6CDD - Total | 23 | 0.2 | H6CDF - Total | 1.7 | 0.2 |
| 1,2,3,4,7,8 | 0.4 | 0.2 | 1,2,3,4,7,8 | 0.2 | 0.2 |
| 1,2,3,6,7,8 | 0.7 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.8 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 7.5 | 0.2 | H7CDF - Total | 1.0 | 0.2 |
| 1,2,3,4,6,7,8 | 3.5 | 0.2 | 1,2,3,4,6,7,8 | 0.7 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 120 | 0.6 | O8CDF - Total | 0.9 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 76 |
| 13C-T4CDD | 73 |
| 13C-P5CDF | 74 |
| 13C-P5CDD | 71 |
| 13C-H6CDF | 77 |
| 13C-H6CDD | 80 |
| 13C-H7CDF | 68 |
| 13C-H7CDD | 64 |
| 13C-O8CDD | 63 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 26 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 26 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McHamilton
Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-008

AXYS FILE: L1610-5B
 Duplicate

CLIENT: Hatfield Consultants Ltd.

DATE: 20-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 7.73 g dry

**A So Special Forces Base
 Soil (duplicate)
 Centre West**

INSTRUMENT: GC-HRMS

% MOISTURE: 24

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 35 | 0.1 | T4CDF - Total | 12 | 0.1 |
| 2,3,7,8 | 24 | 0.1 | 2,3,7,8 | 2.2 | 0.1 |
| P5CDD - Total | 25 | 0.1 | P5CDF - Total | 10 | 0.1 |
| 1,2,3,7,8 | 1.7 | 0.1 | 1,2,3,7,8 | 0.2 | 0.1 |
| | | | 2,3,4,7,8 | 0.3 | 0.1 |
| H6CDD - Total | 24 | 0.2 | H6CDF - Total | 2.3 | 0.2 |
| 1,2,3,4,7,8 | 0.4 | 0.2 | 1,2,3,4,7,8 | 0.2 | 0.2 |
| 1,2,3,6,7,8 | 0.7 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 1.0 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 8.1 | 0.2 | H7CDF - Total | 1.0 | 0.2 |
| 1,2,3,4,6,7,8 | 4.0 | 0.2 | 1,2,3,4,6,7,8 | 0.7 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 130 | 0.7 | O8CDF - Total | 0.8 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 82 |
| 13C-T4CDD | 85 |
| 13C-P5CDF | 81 |
| 13C-P5CDD | 80 |
| 13C-H6CDF | 83 |
| 13C-H6CDD | 82 |
| 13C-H7CDF | 74 |
| 13C-H7CDD | 70 |
| 13C-O8CDD | 77 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 26 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 26 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McMillan
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-010

AXYS FILE: L1610-6

CLIENT: Hatfield Consultants Ltd.

DATE: 20-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 8.13 g dry

**A So Special Forces Base
Soil
Centre**

INSTRUMENT: GC-HRMS

% MOISTURE: 19

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 37 | 0.1 | T4CDF - Total | 6.1 | 0.1 |
| 2,3,7,8 | 25 | 0.1 | 2,3,7,8 | 1.6 | 0.1 |
| P5CDD - Total | 31 | 0.1 | P5CDF - Total | 5.7 | 0.1 |
| 1,2,3,7,8 | 1.9 | 0.1 | 1,2,3,7,8 | 0.3 | 0.1 |
| | | | 2,3,4,7,8 | 0.2 | 0.1 |
| H6CDD - Total | 25 | 0.2 | H6CDF - Total | 1.4 | 0.2 |
| 1,2,3,4,7,8 | 0.5 | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.5 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.7 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | 0.2 | 0.2 |
| H7CDD - Total | 5.2 | 0.2 | H7CDF - Total | 0.7 | 0.2 |
| 1,2,3,4,6,7,8 | 2.6 | 0.2 | 1,2,3,4,6,7,8 | 0.4 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 69 | 0.3 | O8CDF - Total | 0.7 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 72 |
| 13C-T4CDD | 70 |
| 13C-P5CDF | 73 |
| 13C-P5CDD | 70 |
| 13C-H6CDF | 75 |
| 13C-H6CDD | 76 |
| 13C-H7CDF | 69 |
| 13C-H7CDD | 71 |
| 13C-O8CDD | 77 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 27 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 27 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McHamilton
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-012

AXYS FILE: L1610-7

CLIENT: Hatfield Consultants Ltd.

DATE: 20-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 8.63 g dry

**A So Special Forces Base
Soil
Centre East**

INSTRUMENT: GC-HRMS

% MOISTURE: 16

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 54 | 0.1 | T4CDF - Total | 11 | 0.1 |
| 2,3,7,8 | 45 | 0.1 | 2,3,7,8 | 2.7 | 0.1 |
| P5CDD - Total | 21 | 0.1 | P5CDF - Total | 9.0 | 0.1 |
| 1,2,3,7,8 | 1.3 | 0.1 | 1,2,3,7,8 | 0.3 | 0.1 |
| | | | 2,3,4,7,8 | 0.3 | 0.1 |
| H6CDD - Total | 21 | 0.2 | H6CDF - Total | 2.3 | 0.2 |
| 1,2,3,4,7,8 | 0.5 | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.4 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.4 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 7.5 | 0.2 | H7CDF - Total | 0.9 | 0.2 |
| 1,2,3,4,6,7,8 | 3.5 | 0.2 | 1,2,3,4,6,7,8 | 0.6 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 130 | 0.6 | O8CDF - Total | 0.9 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 77 |
| 13C-T4CDD | 79 |
| 13C-P5CDF | 78 |
| 13C-P5CDD | 78 |
| 13C-H6CDF | 89 |
| 13C-H6CDD | 83 |
| 13C-H7CDF | 74 |
| 13C-H7CDD | 77 |
| 13C-O8CDD | 82 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 46 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 46 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

MckHamilton
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-014

AXYS FILE: L1610-8

CLIENT: Hatfield Consultants Ltd.

DATE: 20-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 8.09 g dry

**A So Special Forces Base
Soil
South West**

INSTRUMENT: GC-HRMS

% MOISTURE: 21

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 20 | 0.1 | T4CDF - Total | 6.0 | 0.1 |
| 2,3,7,8 | 15 | 0.1 | 2,3,7,8 | 0.9 | 0.1 |
| P5CDD - Total | 6.5 | 0.1 | P5CDF - Total | 4.8 | 0.1 |
| 1,2,3,7,8 | 0.4 | 0.1 | 1,2,3,7,8 | 0.3 | 0.1 |
| | | | 2,3,4,7,8 | 0.2 | 0.1 |
| H6CDD - Total | 7.6 | 0.2 | H6CDF - Total | 1.5 | 0.2 |
| 1,2,3,4,7,8 | 0.8 | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.3 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.5 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | 0.3 | 0.2 |
| H7CDD - Total | 6.8 | 0.2 | H7CDF - Total | 0.9 | 0.2 |
| 1,2,3,4,6,7,8 | 3.3 | 0.2 | 1,2,3,4,6,7,8 | 0.7 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 75 | 0.3 | O8CDF - Total | 0.8 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 74 |
| 13C-T4CDD | 75 |
| 13C-P5CDF | 74 |
| 13C-P5CDD | 71 |
| 13C-H6CDF | 72 |
| 13C-H6CDD | 77 |
| 13C-H7CDF | 64 |
| 13C-H7CDD | 61 |
| 13C-O8CDD | 63 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 16 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 16 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Hamilton
 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001

CLIENT SAMPLE I.D.: 99VN-016

AXYS FILE: L1610-9

CLIENT: Hatfield Consultants Ltd.

DATE: 20-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 8.47 g dry

**A So Special Forces Base
Soil
South Centre**

INSTRUMENT: GC-HRMS

% MOISTURE: 18

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 7.6 | 0.1 | T4CDF - Total | 2.3 | 0.1 |
| 2,3,7,8 | 5.4 | 0.1 | 2,3,7,8 | 0.4 | 0.1 |
| P5CDD - Total | 3.6 | 0.1 | P5CDF - Total | 1.6 | 0.1 |
| 1,2,3,7,8 | NDR (0.3) | 0.1 | 1,2,3,7,8 | NDR (0.1) | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 4.4 | 0.2 | H6CDF - Total | 0.6 | 0.2 |
| 1,2,3,4,7,8 | 0.2 | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.3 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.4 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 5.1 | 0.2 | H7CDF - Total | 0.5 | 0.2 |
| 1,2,3,4,6,7,8 | 2.4 | 0.2 | 1,2,3,4,6,7,8 | 0.5 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 77 | 1.9 | O8CDF - Total | 0.6 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 80 |
| 13C-T4CDD | 77 |
| 13C-P5CDF | 79 |
| 13C-P5CDD | 76 |
| 13C-H6CDF | 82 |
| 13C-H6CDD | 84 |
| 13C-H7CDF | 74 |
| 13C-H7CDD | 69 |
| 13C-O8CDD | 76 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 5.7 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 5.6 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Hamilton
Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-018

AXYS FILE: L1610-10

CLIENT: Hatfield Consultants Ltd.

DATE: 19-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 7.75 g dry

**A So Special Forces Base
Soil
South East**

INSTRUMENT: GC-HRMS

% MOISTURE: 27

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 5.1 | 0.1 | T4CDF - Total | 2.4 | 0.1 |
| 2,3,7,8 | 4.2 | 0.1 | 2,3,7,8 | 0.4 | 0.1 |
| P5CDD - Total | 2.5 | 0.1 | P5CDF - Total | 1.0 | 0.1 |
| 1,2,3,7,8 | 0.2 | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | 0.2 | 0.1 |
| H6CDD - Total | 6.0 | 0.2 | H6CDF - Total | 0.3 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.4 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.6 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 9.2 | 0.2 | H7CDF - Total | 0.9 | 0.2 |
| 1,2,3,4,6,7,8 | 3.9 | 0.2 | 1,2,3,4,6,7,8 | 0.6 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 240 | 0.5 | O8CDF - Total | 1.0 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 74 |
| 13C-T4CDD | 69 |
| 13C-P5CDF | 70 |
| 13C-P5CDD | 66 |
| 13C-H6CDF | 74 |
| 13C-H6CDD | 68 |
| 13C-H7CDF | 57 |
| 13C-H7CDD | 45 |
| 13C-O8CDD | 43 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 4.9 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 4.8 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McLamilton
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-020

AXYS FILE: L1610-11

CLIENT: Hatfield Consultants Ltd.

DATE: 19-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 7.98 g dry

**A Dot Commune
Soil
Site 1**

INSTRUMENT: GC-HRMS

% MOISTURE: 23

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 1.0 | 0.1 | T4CDF - Total | 1.7 | 0.1 |
| 2,3,7,8 | 1.0 | 0.1 | 2,3,7,8 | 0.3 | 0.1 |
| P5CDD - Total | ND | 0.1 | P5CDF - Total | ND | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 1.5 | 0.2 | H6CDF - Total | ND | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | ND | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.3 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 11 | 0.2 | H7CDF - Total | 0.5 | 0.2 |
| 1,2,3,4,6,7,8 | 3.8 | 0.2 | 1,2,3,4,6,7,8 | 0.4 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 540 | 4.6 | O8CDF - Total | 0.7 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 69 |
| 13C-T4CDD | 64 |
| 13C-P5CDF | 63 |
| 13C-P5CDD | 60 |
| 13C-H6CDF | 64 |
| 13C-H6CDD | 62 |
| 13C-H7CDF | 55 |
| 13C-H7CDD | 46 |
| 13C-O8CDD | 50 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 1.8 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 1.6 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McKamilton
 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001

CLIENT SAMPLE I.D.: 99VN-022

AXYS FILE: L1610-12

CLIENT: Hatfield Consultants Ltd.

DATE: 19-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 7.38 g dry

**A Dot Commune
Soil
Site 1**

INSTRUMENT: GC-HRMS

% MOISTURE: 27

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.8 | 0.1 | T4CDF - Total | 1.7 | 0.1 |
| 2,3,7,8 | 0.8 | 0.1 | 2,3,7,8 | 0.2 | 0.1 |
| P5CDD - Total | ND | 0.1 | P5CDF - Total | 0.3 | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 1.1 | 0.2 | H6CDF - Total | ND | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | ND | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.3 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 8.8 | 0.2 | H7CDF - Total | 0.4 | 0.2 |
| 1,2,3,4,6,7,8 | 3.2 | 0.2 | 1,2,3,4,6,7,8 | 0.4 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 430 | 5.9 | O8CDF - Total | 0.7 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 77 |
| 13C-T4CDD | 73 |
| 13C-P5CDF | 67 |
| 13C-P5CDD | 64 |
| 13C-H6CDF | 63 |
| 13C-H6CDD | 72 |
| 13C-H7CDF | 56 |
| 13C-H7CDD | 45 |
| 13C-O8CDD | 43 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 1.4 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 1.3 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Hamilton
Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-023

AXYS FILE: L1610-13R

CLIENT: Hatfield Consultants

DATE: 13-May-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 8.87 g dry

**A Dot Commune
Soil
Site 2**

INSTRUMENT: GC-HRMS

% MOISTURE: 14

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.6 | 0.1 | T4CDF - Total | 0.9 | 0.1 |
| 2,3,7,8 | 0.4 | 0.1 | 2,3,7,8 | 0.2 | 0.1 |
| P5CDD - Total | ND | 0.1 | P5CDF - Total | 0.3 | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 1.1 | 0.2 | H6CDF - Total | ND | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | ND | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.3 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 3.0 | 0.2 | H7CDF - Total | 0.4 | 0.2 |
| 1,2,3,4,6,7,8 | 1.2 | 0.2 | 1,2,3,4,6,7,8 | 0.4 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 43 | 0.3 | O8CDF - Total | 0.4 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 90 |
| 13C-T4CDD | 99 |
| 13C-P5CDF | 91 |
| 13C-P5CDD | 91 |
| 13C-H6CDF | 98 |
| 13C-H6CDD | 97 |
| 13C-H7CDF | 86 |
| 13C-H7CDD | 84 |
| 13C-O8CDD | 96 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.62 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.51 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McHamilton
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-025

AXYS FILE: L1610-14

CLIENT: Hatfield Consultants Ltd.
 CLIENT NO.: 2607
 SAMPLE TYPE: Sediment

DATE: 19-Apr-1999

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 8.34 g dry

**Huong Lam Commune
 Soil
 Site 1**

INSTRUMENT: GC-HRMS

% MOISTURE: 24

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.6 | 0.1 | T4CDF - Total | 0.3 | 0.1 |
| 2,3,7,8 | 0.4 | 0.1 | 2,3,7,8 | ND | 0.1 |
| P5CDD - Total | ND | 0.1 | P5CDF - Total | ND | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 0.9 | 0.2 | H6CDF - Total | ND | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | ND | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.3 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 3.2 | 0.2 | H7CDF - Total | 0.4 | 0.2 |
| 1,2,3,4,6,7,8 | 1.2 | 0.2 | 1,2,3,4,6,7,8 | 0.4 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 68 | 0.5 | O8CDF - Total | 0.6 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 88 |
| 13C-T4CDD | 86 |
| 13C-P5CDF | 84 |
| 13C-P5CDD | 85 |
| 13C-H6CDF | 70 |
| 13C-H6CDD | 98 |
| 13C-H7CDF | 66 |
| 13C-H7CDD | 60 |
| 13C-O8CDD | 76 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.6 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.5 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Hamilton

 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-027

AXYS FILE: L1610-15

CLIENT: Hatfield Consultants Ltd.

DATE: 19-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 8.29 g dry

**Huong Lam Commune
Soil
Site 2**

INSTRUMENT: GC-HRMS

% MOISTURE: 19

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.4 | 0.1 | T4CDF - Total | 0.6 | 0.1 |
| 2,3,7,8 | ND | 0.1 | 2,3,7,8 | 0.2 | 0.1 |
| P5CDD - Total | 0.3 | 0.1 | P5CDF - Total | 0.2 | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 3.9 | 0.2 | H6CDF - Total | 2.7 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | NDR (0.2) | 0.2 |
| 1,2,3,6,7,8 | 0.6 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.5 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 32 | 0.2 | H7CDF - Total | 6.6 | 0.2 |
| 1,2,3,4,6,7,8 | 14 | 0.2 | 1,2,3,4,6,7,8 | 2.3 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 180 | 0.3 | O8CDF - Total | 6.0 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 80 |
| 13C-T4CDD | 78 |
| 13C-P5CDF | 75 |
| 13C-P5CDD | 70 |
| 13C-H6CDF | 67 |
| 13C-H6CDD | 72 |
| 13C-H7CDF | 59 |
| 13C-H7CDD | 50 |
| 13C-O8CDD | 59 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.6 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.5 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McHamilton
 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001

CLIENT SAMPLE I.D.: 99VN-029

AXYS FILE: L1610-16

CLIENT: Hatfield Consultants Ltd.

DATE: 19-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 8.70 g dry

**Huong Phong Commune
Soil
Site 1**

INSTRUMENT: GC-HRMS

% MOISTURE: 16

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 2.3 | 0.1 | T4CDF - Total | 1.3 | 0.1 |
| 2,3,7,8 | 1.6 | 0.1 | 2,3,7,8 | 0.2 | 0.1 |
| P5CDD - Total | 0.3 | 0.1 | P5CDF - Total | 0.5 | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 1.9 | 0.2 | H6CDF - Total | 0.5 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.2 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.5 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 7.0 | 0.2 | H7CDF - Total | 0.8 | 0.2 |
| 1,2,3,4,6,7,8 | 2.9 | 0.2 | 1,2,3,4,6,7,8 | 0.5 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 270 | 5.7 | O8CDF - Total | 0.8 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 86 |
| 13C-T4CDD | 87 |
| 13C-P5CDF | 81 |
| 13C-P5CDD | 96 |
| 13C-H6CDF | 75 |
| 13C-H6CDD | 86 |
| 13C-H7CDF | 68 |
| 13C-H7CDD | 67 |
| 13C-O8CDD | 84 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 2.1 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 2.0 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McHamilton
Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-031

AXYS FILE: L1610-17

CLIENT: Hatfield Consultants Ltd.

DATE: 19-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 8.09 g dry

**Huong Phong Commune
Soil
Site 2**

INSTRUMENT: GC-HRMS

% MOISTURE: 21

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 8.4 | 0.1 | T4CDF - Total | 2.6 | 0.1 |
| 2,3,7,8 | 6.7 | 0.1 | 2,3,7,8 | 0.4 | 0.1 |
| P5CDD - Total | 2.0 | 0.1 | P5CDF - Total | 2.1 | 0.1 |
| 1,2,3,7,8 | 0.2 | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 4.4 | 0.2 | H6CDF - Total | 1.1 | 0.2 |
| 1,2,3,4,7,8 | 0.4 | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.3 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.5 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 14 | 0.2 | H7CDF - Total | 1.2 | 0.2 |
| 1,2,3,4,6,7,8 | 5.3 | 0.2 | 1,2,3,4,6,7,8 | 0.7 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 210 | 2.6 | O8CDF - Total | 1.2 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 67 |
| 13C-T4CDD | 61 |
| 13C-P5CDF | 59 |
| 13C-P5CDD | 54 |
| 13C-H6CDF | 49 |
| 13C-H6CDD | 61 |
| 13C-H7CDF | 41 |
| 13C-H7CDD | 33 |
| 13C-O8CDD | 32 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 7.3 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 7.2 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Kamel

 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

| | | | |
|---------------------|---------------------------|--|------------------------|
| CLIENT SAMPLE I.D.: | 99VN-033 | | AXYS FILE: L1610-18A |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 19-Apr-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-S-01/Ver.2 |
| SAMPLE TYPE: | Sediment | | |
| SAMPLE SIZE: | 8.14 g dry | Bo Dot Market Soil Site 1 | INSTRUMENT: GC-HRMS |
| % MOISTURE: | 20 | | CONCENTRATION IN: pg/g |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 5.9 | 0.1 | T4CDF - Total | 7.7 | 0.1 |
| 2,3,7,8 | 4.6 | 0.1 | 2,3,7,8 | 1.3 | 0.1 |
| P5CDD - Total | 4.4 | 0.1 | P5CDF - Total | 3.1 | 0.1 |
| 1,2,3,7,8 | NDR (0.5) | 0.1 | 1,2,3,7,8 | 0.4 | 0.1 |
| | | | 2,3,4,7,8 | 0.7 | 0.1 |
| H6CDD - Total | 19 | 0.2 | H6CDF - Total | 19 | 0.2 |
| 1,2,3,4,7,8 | 0.7 | 0.2 | 1,2,3,4,7,8 | 1.9 | 0.2 |
| 1,2,3,6,7,8 | 2.5 | 0.2 | 1,2,3,6,7,8 | 0.8 | 0.2 |
| 1,2,3,7,8,9 | 1.9 | 0.2 | 2,3,4,6,7,8 | 0.6 | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 170 | 0.6 | H7CDF - Total | 31 | 0.3 |
| 1,2,3,4,6,7,8 | 62 | 0.6 | 1,2,3,4,6,7,8 | 9.8 | 0.3 |
| | | | 1,2,3,4,7,8,9 | 1.0 | 0.3 |
| O8CDD - Total | 1100 | 55 | O8CDF - Total | 21 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 78 |
| 13C-T4CDD | 74 |
| 13C-P5CDF | 70 |
| 13C-P5CDD | 67 |
| 13C-H6CDF | 62 |
| 13C-H6CDD | 73 |
| 13C-H7CDF | 58 |
| 13C-H7CDD | 51 |
| 13C-O8CDD | 58 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 7.8 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 7.8 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Hamilton

 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-033

AXYS FILE: L1610-18B
 DUPLICATE

CLIENT: Hatfield Consultants Ltd.

DATE: 19-Apr-1999

CLIENT NO.: 2607

REVISED: 15-Oct-1999

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 8.44 g dry

**Bo Dot Market
 Soil (duplicate)
 Site 1**

INSTRUMENT: GC-HRMS

% MOISTURE: 20

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 6.8 | 0.1 | T4CDF - Total | 16 | 0.1 |
| 2,3,7,8 | 4.6 | 0.1 | 2,3,7,8 | 3.2 | 0.1 |
| P5CDD - Total | 7.8 | 0.1 | P5CDF - Total | 15 | 0.1 |
| 1,2,3,7,8 | 0.6 | 0.1 | 1,2,3,7,8 | 0.8 | 0.1 |
| | | | 2,3,4,7,8 | 1.8 | 0.1 |
| H6CDD - Total | 20 | 0.2 | H6CDF - Total | 26 | 0.2 |
| 1,2,3,4,7,8 | 0.8 | 0.2 | 1,2,3,4,7,8 | 2.3 | 0.2 |
| 1,2,3,6,7,8 | 2.5 | 0.2 | 1,2,3,6,7,8 | 1.4 | 0.2 |
| 1,2,3,7,8,9 | 2.3 | 0.2 | 2,3,4,6,7,8 | 1.6 | 0.2 |
| | | | 1,2,3,7,8,9 | 0.2 | 0.2 |
| H7CDD - Total | 150 | 0.3 | H7CDF - Total | 34 | 0.2 |
| 1,2,3,4,6,7,8 | 65 | 0.3 | 1,2,3,4,6,7,8 | 12 | 0.2 |
| | | | 1,2,3,4,7,8,9 | 1.3 | 0.2 |
| O8CDD - Total | 1100 | 1.3 | O8CDF - Total | 19 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 90 |
| 13C-T4CDD | 89 |
| 13C-P5CDF | 81 |
| 13C-P5CDD | 75 |
| 13C-H6CDF | 79 |
| 13C-H6CDD | 87 |
| 13C-H7CDF | 70 |
| 13C-H7CDD | 75 |
| 13C-O8CDD | 82 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 9.10 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 9.10 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McHamilton
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-035

AXYS FILE: L1610-19

CLIENT: Hatfield Consultants Ltd.

DATE: 22-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 9.53 g dry

**Phu Vinh Commune
Soil
Site 1**

INSTRUMENT: GC-HRMS

% MOISTURE: 5.3

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 3.7 | 0.1 | T4CDF - Total | 1.1 | 0.1 |
| 2,3,7,8 | 3.0 | 0.1 | 2,3,7,8 | 0.3 | 0.1 |
| P5CDD - Total | 0.7 | 0.1 | P5CDF - Total | 0.8 | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 2.4 | 0.2 | H6CDF - Total | 0.8 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | 0.2 | 0.2 |
| 1,2,3,6,7,8 | 0.3 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.4 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | 0.2 | 0.2 |
| H7CDD - Total | 11 | 0.2 | H7CDF - Total | 0.6 | 0.2 |
| 1,2,3,4,6,7,8 | 5.1 | 0.2 | 1,2,3,4,6,7,8 | 0.6 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 540 | 0.8 | O8CDF - Total | 1.2 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 84 |
| 13C-T4CDD | 81 |
| 13C-P5CDF | 80 |
| 13C-P5CDD | 77 |
| 13C-H6CDF | 92 |
| 13C-H6CDD | 92 |
| 13C-H7CDF | 82 |
| 13C-H7CDD | 77 |
| 13C-O8CDD | 83 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 3.8 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 3.7 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Milton
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-037

AXYS FILE: L1610-20

CLIENT: Hatfield Consultants Ltd.

DATE: 22-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 9.37 g dry

**Phu Vinh Commune
Soil
Site 2**

INSTRUMENT: GC-HRMS

% MOISTURE: 6.0

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 3.7 | 0.1 | T4CDF - Total | 2.6 | 0.1 |
| 2,3,7,8 | 3.1 | 0.1 | 2,3,7,8 | 0.5 | 0.1 |
| P5CDD - Total | 1.0 | 0.1 | P5CDF - Total | 2.4 | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | 0.1 | 0.1 |
| H6CDD - Total | 3.2 | 0.2 | H6CDF - Total | 0.7 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | 0.3 | 0.2 |
| 1,2,3,6,7,8 | 0.3 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.5 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 13 | 0.2 | H7CDF - Total | 1.3 | 0.2 |
| 1,2,3,4,6,7,8 | 6.3 | 0.2 | 1,2,3,4,6,7,8 | 0.7 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 610 | 0.3 | O8CDF - Total | 1.5 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 54 |
| 13C-T4CDD | 57 |
| 13C-P5CDF | 58 |
| 13C-P5CDD | 54 |
| 13C-H6CDF | 58 |
| 13C-H6CDD | 59 |
| 13C-H7CDF | 54 |
| 13C-H7CDD | 49 |
| 13C-O8CDD | 50 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 4.1 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 4.0 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Maximilian
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-039

AXYS FILE: L1610-21

CLIENT: Hatfield Consultants Ltd.

DATE: 22-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 9.23 g dry

**Hong Thuong Commune
Soil
Site 1**

INSTRUMENT: GC-HRMS

% MOISTURE: 8.7

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 6.8 | 0.1 | T4CDF - Total | 1.3 | 0.1 |
| 2,3,7,8 | 5.1 | 0.1 | 2,3,7,8 | 0.3 | 0.1 |
| P5CDD - Total | 1.5 | 0.1 | P5CDF - Total | 1.5 | 0.1 |
| 1,2,3,7,8 | NDR (0.1) | 0.1 | 1,2,3,7,8 | 0.1 | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 6.1 | 0.2 | H6CDF - Total | 0.7 | 0.2 |
| 1,2,3,4,7,8 | NDR (0.2) | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.4 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.9 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 30 | 0.2 | H7CDF - Total | 0.9 | 0.2 |
| 1,2,3,4,6,7,8 | 13 | 0.2 | 1,2,3,4,6,7,8 | 0.6 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 2200 | 0.3 | O8CDF - Total | 1.1 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 64 |
| 13C-T4CDD | 55 |
| 13C-P5CDF | 77 |
| 13C-P5CDD | 70 |
| 13C-H6CDF | 64 |
| 13C-H6CDD | 69 |
| 13C-H7CDF | 59 |
| 13C-H7CDD | 52 |
| 13C-O8CDD | 53 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 7.7 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 7.6 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Hamilton
 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001

CLIENT SAMPLE I.D.: 99VN-041

AXYS FILE: L1610-22

CLIENT: Hatfield Consultants Ltd.

DATE: 22-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 9.45 g dry

**Son Thuy Commune
Soil
Site 1**

INSTRUMENT: GC-HRMS

% MOISTURE: 5.4

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 4.3 | 0.1 | T4CDF - Total | 2.1 | 0.1 |
| 2,3,7,8 | 3.1 | 0.1 | 2,3,7,8 | 0.4 | 0.1 |
| P5CDD - Total | 5.7 | 0.1 | P5CDF - Total | 4.1 | 0.1 |
| 1,2,3,7,8 | 0.5 | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | 0.3 | 0.1 |
| H6CDD - Total | 29 | 0.2 | H6CDF - Total | 19 | 0.2 |
| 1,2,3,4,7,8 | 1.1 | 0.2 | 1,2,3,4,7,8 | 1.3 | 0.2 |
| 1,2,3,6,7,8 | 3.8 | 0.2 | 1,2,3,6,7,8 | 0.6 | 0.2 |
| 1,2,3,7,8,9 | 3.6 | 0.2 | 2,3,4,6,7,8 | 0.4 | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 230 | 0.2 | H7CDF - Total | 44 | 0.2 |
| 1,2,3,4,6,7,8 | 100 | 0.2 | 1,2,3,4,6,7,8 | 13 | 0.2 |
| | | | 1,2,3,4,7,8,9 | 1.4 | 0.2 |
| O8CDD - Total | 1800 | 0.3 | O8CDF - Total | 36 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 70 |
| 13C-T4CDD | 71 |
| 13C-P5CDF | 81 |
| 13C-P5CDD | 78 |
| 13C-H6CDF | 66 |
| 13C-H6CDD | 70 |
| 13C-H7CDF | 58 |
| 13C-H7CDD | 57 |
| 13C-O8CDD | 50 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 7.6 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 7.6 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Lamelle
Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001

CLIENT SAMPLE I.D.: 99VN-043

AXYS FILE: L1610-23

CLIENT: Hatfield Consultants Ltd.

DATE: 22-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 9.43 g dry

**Son Thuy Commune
Soil
Site 2**

INSTRUMENT: GC-HRMS

% MOISTURE: 5.4

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 6.6 | 0.1 | T4CDF - Total | 1.0 | 0.1 |
| 2,3,7,8 | 3.4 | 0.1 | 2,3,7,8 | NDR (0.2) | 0.1 |
| P5CDD - Total | 4.5 | 0.1 | P5CDF - Total | 1.3 | 0.1 |
| 1,2,3,7,8 | 0.5 | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | 0.1 | 0.1 |
| H6CDD - Total | 9.2 | 0.2 | H6CDF - Total | 1.1 | 0.2 |
| 1,2,3,4,7,8 | 0.2 | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.5 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 1.0 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 30 | 0.2 | H7CDF - Total | 1.7 | 0.2 |
| 1,2,3,4,6,7,8 | 12 | 0.2 | 1,2,3,4,6,7,8 | 0.8 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 1100 | 0.3 | O8CDF - Total | 2.0 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 56 |
| 13C-T4CDD | 54 |
| 13C-P5CDF | 64 |
| 13C-P5CDD | 56 |
| 13C-H6CDF | 55 |
| 13C-H6CDD | 54 |
| 13C-H7CDF | 48 |
| 13C-H7CDD | 38 |
| 13C-O8CDD | 34 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 5.1 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 5.1 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McNamilton
Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-045

AXYS FILE: L1610-24A

CLIENT: Hatfield Consultants Ltd.

DATE: 22-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 9.77 g dry

**Hong Van Commune
Soil
Site 1**

INSTRUMENT: GC-HRMS

% MOISTURE: 4.0

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.5 | 0.1 | T4CDF - Total | 0.6 | 0.1 |
| 2,3,7,8 | 0.3 | 0.1 | 2,3,7,8 | 0.1 | 0.1 |
| P5CDD - Total | 0.8 | 0.1 | P5CDF - Total | ND | 0.1 |
| 1,2,3,7,8 | NDR(0.2) | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 4.5 | 0.2 | H6CDF - Total | 0.5 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | 0.2 | 0.2 |
| 1,2,3,6,7,8 | 0.4 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 2.5 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 6.1 | 0.2 | H7CDF - Total | 0.8 | 0.2 |
| 1,2,3,4,6,7,8 | 3.1 | 0.2 | 1,2,3,4,6,7,8 | 0.5 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 130 | 0.3 | O8CDF - Total | 0.8 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 70 |
| 13C-T4CDD | 69 |
| 13C-P5CDF | 73 |
| 13C-P5CDD | 66 |
| 13C-H6CDF | 61 |
| 13C-H6CDD | 61 |
| 13C-H7CDF | 55 |
| 13C-H7CDD | 49 |
| 13C-O8CDD | 48 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.9 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.8 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Hamilton
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-045

AXYS FILE: L1610-24B
 Duplicate

CLIENT: Hatfield Consultants Ltd.

DATE: 22-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 9.45 g dry

**Hong Van Commune
 Soil (duplicate)
 Site 1**

INSTRUMENT: GC-HRMS

% MOISTURE: 5.3

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.8 | 0.1 | T4CDF - Total | 0.5 | 0.1 |
| 2,3,7,8 | 0.4 | 0.1 | 2,3,7,8 | 0.1 | 0.1 |
| P5CDD - Total | 1.0 | 0.1 | P5CDF - Total | ND | 0.1 |
| 1,2,3,7,8 | 0.2 | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 5.0 | 0.2 | H6CDF - Total | 0.4 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | 0.2 | 0.2 |
| 1,2,3,6,7,8 | 0.5 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 2.9 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 6.3 | 0.2 | H7CDF - Total | 1.1 | 0.2 |
| 1,2,3,4,6,7,8 | 3.2 | 0.2 | 1,2,3,4,6,7,8 | 0.8 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 130 | 0.3 | O8CDF - Total | 0.8 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 54 |
| 13C-T4CDD | 54 |
| 13C-P5CDF | 60 |
| 13C-P5CDD | 55 |
| 13C-H6CDF | 51 |
| 13C-H6CDD | 55 |
| 13C-H7CDF | 46 |
| 13C-H7CDD | 47 |
| 13C-O8CDD | 48 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 1.1 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 1.0 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McMillan
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-047

AXYS FILE: L1610-25

CLIENT: Hatfield Consultants Ltd.

DATE: 22-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 9.65 g dry

**Hong Van Commune
Soil
Site 2**

INSTRUMENT: GC-HRMS

% MOISTURE: 3.4

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 1.0 | 0.1 | T4CDF - Total | 0.9 | 0.1 |
| 2,3,7,8 | 0.3 | 0.1 | 2,3,7,8 | 0.1 | 0.1 |
| P5CDD - Total | ND | 0.1 | P5CDF - Total | 0.3 | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | 0.1 | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 1.4 | 0.2 | H6CDF - Total | 0.2 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.3 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.5 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 3.5 | 0.2 | H7CDF - Total | 0.4 | 0.2 |
| 1,2,3,4,6,7,8 | 1.5 | 0.2 | 1,2,3,4,6,7,8 | 0.4 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 64 | 0.3 | O8CDF - Total | 0.5 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 77 |
| 13C-T4CDD | 67 |
| 13C-P5CDF | 77 |
| 13C-P5CDD | 71 |
| 13C-H6CDF | 68 |
| 13C-H6CDD | 72 |
| 13C-H7CDF | 59 |
| 13C-H7CDD | 57 |
| 13C-O8CDD | 46 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.6 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.5 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McHamilton
 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001

CLIENT SAMPLE I.D.: 99VN-049

AXYS FILE: L1610-26

CLIENT: Hatfield Consultants Ltd.

DATE: 22-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 9.75 g dry

**Hong Kim Commune
Soil
Site 1**

INSTRUMENT: GC-HRMS

% MOISTURE: 3.4

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 4.7 | 0.1 | T4CDF - Total | 0.9 | 0.1 |
| 2,3,7,8 | 3.7 | 0.1 | 2,3,7,8 | 0.2 | 0.1 |
| P5CDD - Total | 0.8 | 0.1 | P5CDF - Total | 0.3 | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 3.6 | 0.2 | H6CDF - Total | ND | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.3 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 1.5 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 3.7 | 0.2 | H7CDF - Total | 0.4 | 0.2 |
| 1,2,3,4,6,7,8 | 1.9 | 0.2 | 1,2,3,4,6,7,8 | 0.4 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 74 | 0.3 | O8CDF - Total | 0.5 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 79 |
| 13C-T4CDD | 82 |
| 13C-P5CDF | 83 |
| 13C-P5CDD | 77 |
| 13C-H6CDF | 69 |
| 13C-H6CDD | 72 |
| 13C-H7CDF | 67 |
| 13C-H7CDD | 64 |
| 13C-O8CDD | 75 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 4.1 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 4.0 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Hamilton
Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001

CLIENT SAMPLE I.D.: 99VN-051

AXYS FILE: L1610-27

CLIENT: Hatfield Consultants Ltd.

DATE: 22-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 9.24 g dry

**Hong Quang Commune
Soil
Site 1**

INSTRUMENT: GC-HRMS

% MOISTURE: 7.2

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 8.9 | 0.1 | T4CDF - Total | 1.1 | 0.1 |
| 2,3,7,8 | 7.9 | 0.1 | 2,3,7,8 | 0.4 | 0.1 |
| P5CDD - Total | 2.0 | 0.1 | P5CDF - Total | 1.9 | 0.1 |
| 1,2,3,7,8 | NDR (0.2) | 0.1 | 1,2,3,7,8 | 0.2 | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 5.4 | 0.2 | H6CDF - Total | 1.5 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | 0.3 | 0.2 |
| 1,2,3,6,7,8 | 0.5 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 1.1 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | 0.3 | 0.2 |
| H7CDD - Total | 4.3 | 0.2 | H7CDF - Total | 0.9 | 0.2 |
| 1,2,3,4,6,7,8 | 2.2 | 0.2 | 1,2,3,4,6,7,8 | 0.6 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 67 | 0.3 | O8CDF - Total | 0.6 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 75 |
| 13C-T4CDD | 81 |
| 13C-P5CDF | 78 |
| 13C-P5CDD | 73 |
| 13C-H6CDF | 62 |
| 13C-H6CDD | 65 |
| 13C-H7CDF | 54 |
| 13C-H7CDD | 48 |
| 13C-O8CDD | 45 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 8.3 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 8.3 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McMillan
Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-053

AXYS FILE: L1610-28

CLIENT: Hatfield Consultants Ltd.

DATE: 22-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 8.82 g dry

**Ta Bat Special Forces Base
Soil
North East**

INSTRUMENT: GC-HRMS

% MOISTURE: 20

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 15 | 0.1 | T4CDF - Total | 11 | 0.1 |
| 2,3,7,8 | 9.4 | 0.1 | 2,3,7,8 | 1.4 | 0.1 |
| P5CDD - Total | 7.8 | 0.1 | P5CDF - Total | 11 | 0.1 |
| 1,2,3,7,8 | 0.8 | 0.1 | 1,2,3,7,8 | 0.3 | 0.1 |
| | | | 2,3,4,7,8 | 0.3 | 0.1 |
| H6CDD - Total | 8.5 | 0.2 | H6CDF - Total | 2.4 | 0.2 |
| 1,2,3,4,7,8 | 0.2 | 0.2 | 1,2,3,4,7,8 | 0.3 | 0.2 |
| 1,2,3,6,7,8 | 0.6 | 0.2 | 1,2,3,6,7,8 | 0.3 | 0.2 |
| 1,2,3,7,8,9 | 0.7 | 0.2 | 2,3,4,6,7,8 | 0.2 | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 13 | 0.2 | H7CDF - Total | 2.3 | 0.2 |
| 1,2,3,4,6,7,8 | 5.6 | 0.2 | 1,2,3,4,6,7,8 | 1.4 | 0.2 |
| | | | 1,2,3,4,7,8,9 | 0.3 | 0.2 |
| O8CDD - Total | 520 | 1.3 | O8CDF - Total | 2.1 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 82 |
| 13C-T4CDD | 72 |
| 13C-P5CDF | 73 |
| 13C-P5CDD | 73 |
| 13C-H6CDF | 76 |
| 13C-H6CDD | 73 |
| 13C-H7CDF | 70 |
| 13C-H7CDD | 56 |
| 13C-O8CDD | 57 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 11 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 11 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McMillan
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

| | |
|--|----------------------------------|
| CLIENT SAMPLE I.D.: 99VN-055 | AXYS FILE: L1610-29 |
| CLIENT: Hatfield Consultants Ltd. | DATE: 22-Apr-1999 |
| CLIENT NO.: 2607 | METHOD NO.: DX-S-01/Ver.2 |
| SAMPLE TYPE: Sediment | INSTRUMENT: GC-HRMS |
| SAMPLE SIZE: 8.18 g dry | CONCENTRATION IN: pg/g |
| % MOISTURE: 23 | |

**Ta Bat Special Forces Base
Soil
North Centre**

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 12 | 0.1 | T4CDF - Total | 3.2 | 0.1 |
| 2,3,7,8 | 9.2 | 0.1 | 2,3,7,8 | 0.6 | 0.1 |
| P5CDD - Total | 2.5 | 0.1 | P5CDF - Total | 2.8 | 0.1 |
| 1,2,3,7,8 | 0.4 | 0.1 | 1,2,3,7,8 | 0.2 | 0.1 |
| | | | 2,3,4,7,8 | 0.2 | 0.1 |
| H6CDD - Total | 8.0 | 0.2 | H6CDF - Total | 3.5 | 0.2 |
| 1,2,3,4,7,8 | 0.3 | 0.2 | 1,2,3,4,7,8 | 0.4 | 0.2 |
| 1,2,3,6,7,8 | 0.7 | 0.2 | 1,2,3,6,7,8 | 0.3 | 0.2 |
| 1,2,3,7,8,9 | 0.7 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 28 | 0.2 | H7CDF - Total | 4.9 | 0.2 |
| 1,2,3,4,6,7,8 | 13 | 0.2 | 1,2,3,4,6,7,8 | 2.4 | 0.2 |
| | | | 1,2,3,4,7,8,9 | 0.2 | 0.2 |
| O8CDD - Total | 820 | 2.6 | O8CDF - Total | 3.8 | 0.3 |

Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 82 |
| 13C-T4CDD | 69 |
| 13C-P5CDF | 71 |
| 13C-P5CDD | 72 |
| 13C-H6CDF | 79 |
| 13C-H6CDD | 74 |
| 13C-H7CDF | 71 |
| 13C-H7CDD | 59 |
| 13C-O8CDD | 59 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 11 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 11 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McLamilton
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

| | | | |
|----------------------------|----------------------------------|-----------------------------------|----------------------|
| CLIENT SAMPLE I.D.: | 99VN-057 | AXYS FILE: | L1610-30A |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 22-Apr-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-S-01/Ver.2 |
| SAMPLE TYPE: | Sediment | INSTRUMENT: | GC-HRMS |
| SAMPLE SIZE: | 8.58 g dry | Ta Bat Special Forces Base | |
| | | Soil | |
| % MOISTURE: | 15 | North West | |
| | | CONCENTRATION IN: pg/g | |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 16 | 0.1 | T4CDF - Total | 5.7 | 0.1 |
| 2,3,7,8 | 11 | 0.1 | 2,3,7,8 | 0.7 | 0.1 |
| P5CDD - Total | 7.7 | 0.1 | P5CDF - Total | 2.8 | 0.2 |
| 1,2,3,7,8 | 0.9 | 0.1 | 1,2,3,7,8 | ND | 0.2 |
| | | | 2,3,4,7,8 | ND | 0.2 |
| H6CDD - Total | 9.6 | 0.2 | H6CDF - Total | 1.0 | 0.2 |
| 1,2,3,4,7,8 | 0.2 | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | NDR (0.6) | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.7 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 21 | 0.2 | H7CDF - Total | 1.6 | 0.2 |
| 1,2,3,4,6,7,8 | 8.9 | 0.2 | 1,2,3,4,6,7,8 | 0.8 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 880 | 2.0 | O8CDF - Total | 1.6 | 0.3 |

Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 81 |
| 13C-T4CDD | 73 |
| 13C-P5CDF | 76 |
| 13C-P5CDD | 76 |
| 13C-H6CDF | 85 |
| 13C-H6CDD | 82 |
| 13C-H7CDF | 82 |
| 13C-H7CDD | 75 |
| 13C-O8CDD | 79 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 13 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 13 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. MacLennan

 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

| | | | |
|----------------------------|----------------------------------|---|--------------------------------|
| CLIENT SAMPLE I.D.: | 99VN-057 | AXYS FILE: | L1610-30B Duplicate |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 22-Apr-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-S-01/Ver.2 |
| SAMPLE TYPE: | Sediment | INSTRUMENT: | GC-HRMS |
| SAMPLE SIZE: | 9.33 g dry | Ta Bat Special Forces Base Soil (duplicate) North West | |
| % MOISTURE: | 9.0 | CONCENTRATION IN: | pg/g |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 15 | 0.1 | T4CDF - Total | 6.1 | 0.1 |
| 2,3,7,8 | 9.9 | 0.1 | 2,3,7,8 | 0.7 | 0.1 |
| P5CDD - Total | 8.9 | 0.1 | P5CDF - Total | 2.7 | 0.2 |
| 1,2,3,7,8 | 0.8 | 0.1 | 1,2,3,7,8 | ND | 0.2 |
| | | | 2,3,4,7,8 | ND | 0.2 |
| H6CDD - Total | 9.9 | 0.2 | H6CDF - Total | 0.7 | 0.2 |
| 1,2,3,4,7,8 | 0.2 | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | NDR (0.6) | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.6 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 20 | 0.2 | H7CDF - Total | 1.5 | 0.2 |
| 1,2,3,4,6,7,8 | 7.7 | 0.2 | 1,2,3,4,6,7,8 | 0.8 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 740 | 2.0 | O8CDF - Total | 1.7 | 0.3 |

Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 72 |
| 13C-T4CDD | 59 |
| 13C-P5CDF | 65 |
| 13C-P5CDD | 64 |
| 13C-H6CDF | 78 |
| 13C-H6CDD | 70 |
| 13C-H7CDF | 67 |
| 13C-H7CDD | 50 |
| 13C-O8CDD | 50 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

2,3,7,8 - TCDD TEQs (ND=1/2 DL) = 11 pg/g
2,3,7,8 - TCDD TEQs (ND=0) = 11 pg/g

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McKamilton
Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

| | |
|--|----------------------------------|
| CLIENT SAMPLE I.D.: 99VN-059 | AXYS FILE: L1610-31 |
| CLIENT: Hatfield Consultants Ltd. | DATE: 22-Apr-1999 |
| CLIENT NO.: 2607 | METHOD NO.: DX-S-01/Ver.2 |
| SAMPLE TYPE: Sediment | INSTRUMENT: GC-HRMS |
| SAMPLE SIZE: 8.53 g dry | CONCENTRATION IN: pg/g |
| % MOISTURE: 18 | |

**Ta Bat Special Forces Base
Soil
Centre West**

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 40 | 0.1 | T4CDF - Total | 5.3 | 0.1 |
| 2,3,7,8 | 35 | 0.1 | 2,3,7,8 | 1.0 | 0.1 |
| P5CDD - Total | 7.0 | 0.1 | P5CDF - Total | 2.5 | 0.2 |
| 1,2,3,7,8 | 0.6 | 0.1 | 1,2,3,7,8 | 0.2 | 0.2 |
| | | | 2,3,4,7,8 | ND | 0.2 |
| H6CDD - Total | 8.9 | 0.2 | H6CDF - Total | 1.0 | 0.2 |
| 1,2,3,4,7,8 | 0.2 | 0.2 | 1,2,3,4,7,8 | 0.2 | 0.2 |
| 1,2,3,6,7,8 | 0.5 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.6 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 18 | 0.2 | H7CDF - Total | 1.2 | 0.2 |
| 1,2,3,4,6,7,8 | 8.1 | 0.2 | 1,2,3,4,6,7,8 | 0.9 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 800 | 1.4 | O8CDF - Total | 1.3 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 88 |
| 13C-T4CDD | 79 |
| 13C-P5CDF | 80 |
| 13C-P5CDD | 87 |
| 13C-H6CDF | 90 |
| 13C-H6CDD | 86 |
| 13C-H7CDF | 79 |
| 13C-H7CDD | 73 |
| 13C-O8CDD | 85 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 37 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 36 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McKamilton
 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001

CLIENT SAMPLE I.D.: 99VN-061

AXYS FILE: L1610-32

CLIENT: Hatfield Consultants Ltd.

DATE: 22-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 8.71 g dry **Ta Bat Special Forces Base**

INSTRUMENT: GC-HRMS

% MOISTURE: 18

**Soil
Centre**

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 10 | 0.1 | T4CDF - Total | 6.5 | 0.1 |
| 2,3,7,8 | 5.9 | 0.1 | 2,3,7,8 | 0.8 | 0.1 |
| P5CDD - Total | 6.7 | 0.1 | P5CDF - Total | 6.8 | 0.1 |
| 1,2,3,7,8 | 0.7 | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | 0.2 | 0.1 |
| H6CDD - Total | 8.0 | 0.2 | H6CDF - Total | 0.7 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.4 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.8 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 10 | 0.2 | H7CDF - Total | 0.9 | 0.2 |
| 1,2,3,4,6,7,8 | 4.8 | 0.2 | 1,2,3,4,6,7,8 | 0.6 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 400 | 0.6 | O8CDF - Total | 1.0 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 84 |
| 13C-T4CDD | 71 |
| 13C-P5CDF | 66 |
| 13C-P5CDD | 74 |
| 13C-H6CDF | 85 |
| 13C-H6CDD | 79 |
| 13C-H7CDF | 73 |
| 13C-H7CDD | 61 |
| 13C-O8CDD | 57 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 7.1 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 7.0 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McHamilton
Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

| | | | | |
|---------------------|----------------------|--|-------------------|---------------|
| CLIENT SAMPLE I.D.: | 99VN-063 | | AXYS FILE: | L1610-33R |
| CLIENT: | Hatfield Consultants | | DATE: | 13-May-1999 |
| CLIENT NO.: | 2607 | | METHOD NO.: | DX-S-01/Ver.2 |
| SAMPLE TYPE: | Sediment | | | |
| SAMPLE SIZE: | 9.21 g dry | Ta Bat Special Forces Base Soil Centre East | INSTRUMENT: | GC-HRMS |
| % MOISTURE: | 11 | | CONCENTRATION IN: | pg/g |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 8.8 | 0.1 | T4CDF - Total | 2.7 | 0.1 |
| 2,3,7,8 | 4.3 | 0.1 | 2,3,7,8 | 0.3 | 0.1 |
| P5CDD - Total | 1.4 | 0.1 | P5CDF - Total | 1.0 | 0.1 |
| 1,2,3,7,8 | 0.3 | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 5.7 | 0.2 | H6CDF - Total | 0.3 | 0.2 |
| 1,2,3,4,7,8 | 0.2 | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.4 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.9 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 18 | 0.2 | H7CDF - Total | 0.6 | 0.2 |
| 1,2,3,4,6,7,8 | 7.3 | 0.2 | 1,2,3,4,6,7,8 | 0.6 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 750 | 3.5 | O8CDF - Total | 0.6 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 93 |
| 13C-T4CDD | 98 |
| 13C-P5CDF | 95 |
| 13C-P5CDD | 99 |
| 13C-H6CDF | 99 |
| 13C-H6CDD | 93 |
| 13C-H7CDF | 81 |
| 13C-H7CDD | 75 |
| 13C-O8CDD | 91 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 5.5 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 5.5 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Hamilton

 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-065

AXYS FILE: L1610-34

CLIENT: Hatfield Consultants Ltd.

DATE: 22-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 7.75 g dry

**Ta Bat Special Forces Base
Soil
South Center**

INSTRUMENT: GC-HRMS

% MOISTURE: 23

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 16 | 0.1 | T4CDF - Total | 4.1 | 0.1 |
| 2,3,7,8 | 8.4 | 0.1 | 2,3,7,8 | 0.5 | 0.1 |
| P5CDD - Total | 5.4 | 0.1 | P5CDF - Total | 2.1 | 0.1 |
| 1,2,3,7,8 | 0.8 | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 10 | 0.2 | H6CDF - Total | 0.8 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.4 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.7 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 16 | 0.2 | H7CDF - Total | 1.0 | 0.2 |
| 1,2,3,4,6,7,8 | 7.4 | 0.2 | 1,2,3,4,6,7,8 | 0.7 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 1100 | 1.0 | O8CDF - Total | 1.2 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 75 |
| 13C-T4CDD | 64 |
| 13C-P5CDF | 66 |
| 13C-P5CDD | 68 |
| 13C-H6CDF | 83 |
| 13C-H6CDD | 75 |
| 13C-H7CDF | 68 |
| 13C-H7CDD | 53 |
| 13C-O8CDD | 48 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 10 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 10 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Hamilton
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-067

AXYS FILE: L1610-35

CLIENT: Hatfield Consultants Ltd.

DATE: 22-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 8.05 g dry

**Ta Bat Special Forces Base
Soil
South East**

INSTRUMENT: GC-HRMS

% MOISTURE: 21

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 12 | 0.1 | T4CDF - Total | 4.4 | 0.1 |
| 2,3,7,8 | 7.7 | 0.1 | 2,3,7,8 | 0.6 | 0.1 |
| P5CDD - Total | 3.1 | 0.1 | P5CDF - Total | 2.8 | 0.1 |
| 1,2,3,7,8 | 0.5 | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 10 | 0.2 | H6CDF - Total | 1.0 | 0.2 |
| 1,2,3,4,7,8 | 0.3 | 0.2 | 1,2,3,4,7,8 | 0.2 | 0.2 |
| 1,2,3,6,7,8 | 0.6 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 1.6 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 17 | 0.2 | H7CDF - Total | 1.4 | 0.2 |
| 1,2,3,4,6,7,8 | 8.6 | 0.2 | 1,2,3,4,6,7,8 | 0.9 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 530 | 1.2 | O8CDF - Total | 1.5 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 95 |
| 13C-T4CDD | 73 |
| 13C-P5CDF | 86 |
| 13C-P5CDD | 87 |
| 13C-H6CDF | 87 |
| 13C-H6CDD | 80 |
| 13C-H7CDF | 72 |
| 13C-H7CDD | 62 |
| 13C-O8CDD | 56 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 9.0 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 8.9 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Hamilton
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-069

AXYS FILE: L1610-36

CLIENT: Hatfield Consultants Ltd.
 CLIENT NO.: 2607
 SAMPLE TYPE: Sediment

DATE: 22-Apr-1999
 REVISED: 12-Oct-1999
 METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 7.93 g dry **Ta Bat Special Forces Base**
Soil
South West

INSTRUMENT: GC-HRMS

% MOISTURE: 22

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 27 | 0.1 | T4CDF - Total | 4.5 | 0.1 |
| 2,3,7,8 | 18 | 0.1 | 2,3,7,8 | 0.4 | 0.1 |
| P5CDD - Total | 5.2 | 0.1 | P5CDF - Total | 2.1 | 0.1 |
| 1,2,3,7,8 | 0.9 | 0.1 | 1,2,3,7,8 | 0.1 | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 12 | 0.2 | H6CDF - Total | 3.0 | 0.2 |
| 1,2,3,4,7,8 | 0.2 | 0.2 | 1,2,3,4,7,8 | 0.3 | 0.2 |
| 1,2,3,6,7,8 | 0.7 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 1.8 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 19 | 0.2 | H7CDF - Total | 4.5 | 0.2 |
| 1,2,3,4,6,7,8 | 9.8 | 0.2 | 1,2,3,4,6,7,8 | 1.8 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 520 | 0.4 | O8CDF - Total | 3.2 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 79 |
| 13C-T4CDD | 67 |
| 13C-P5CDF | 68 |
| 13C-P5CDD | 68 |
| 13C-H6CDF | 78 |
| 13C-H6CDD | 74 |
| 13C-H7CDF | 67 |
| 13C-H7CDD | 56 |
| 13C-O8CDD | 49 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 19 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 19 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McLennan
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

| | | | |
|----------------------------|----------------------------------|--|----------------------|
| CLIENT SAMPLE I.D.: | 99VN-071 | AXYS FILE: | L1610-37 |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 22-Apr-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-S-01/Ver.2 |
| SAMPLE TYPE: | Sediment | INSTRUMENT: | GC-HRMS |
| SAMPLE SIZE: | 8.70 g dry | A Luoi Market Soil Site 1 | |
| % MOISTURE: | 14 | CONCENTRATION IN: | pg/g |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 21 | 0.1 | T4CDF - Total | 7.9 | 0.1 |
| 2,3,7,8 | 15 | 0.1 | 2,3,7,8 | 0.8 | 0.1 |
| P5CDD - Total | 9.5 | 0.1 | P5CDF - Total | 4.0 | 0.1 |
| 1,2,3,7,8 | 0.7 | 0.1 | 1,2,3,7,8 | 0.1 | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 11 | 0.2 | H6CDF - Total | 0.8 | 0.2 |
| 1,2,3,4,7,8 | 0.2 | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.6 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 1.5 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 19 | 0.2 | H7CDF - Total | 0.4 | 0.2 |
| 1,2,3,4,6,7,8 | 8.7 | 0.2 | 1,2,3,4,6,7,8 | 0.4 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 770 | 0.8 | O8CDF - Total | 0.6 | 0.3 |

Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 66 |
| 13C-T4CDD | 53 |
| 13C-P5CDF | 57 |
| 13C-P5CDD | 55 |
| 13C-H6CDF | 65 |
| 13C-H6CDD | 60 |
| 13C-H7CDF | 56 |
| 13C-H7CDD | 40 |
| 13C-O8CDD | 34 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

2,3,7,8 - TCDD TEQs (ND=1/2 DL) = 17 pg/g
 2,3,7,8 - TCDD TEQs (ND=0) = 17 pg/g

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McKamilton
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

| | | | | |
|---------------------|---------------------------|---|-------------------|---------------|
| CLIENT SAMPLE I.D.: | 99VN-073 | | AXYS FILE: | L1610-38 |
| CLIENT: | Hatfield Consultants Ltd. | | DATE: | 22/Apr/1999 |
| CLIENT NO: | 2607 | | METHOD NO.: | DX-S-01/Ver.2 |
| SAMPLE TYPE: | Sediment | | | |
| SAMPLE SIZE: | 9.24 g dry | A Luoi Commune Soil Site 1 | INSTRUMENT: | GC-HRMS |
| % MOISTURE: | 14 | | CONCENTRATION IN: | pg/g |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 3.1 | 0.1 | T4CDF - Total | 1.3 | 0.1 |
| 2,3,7,8 | 2.1 | 0.1 | 2,3,7,8 | 0.2 | 0.1 |
| P5CDD - Total | 1.9 | 0.1 | P5CDF - Total | 0.7 | 0.1 |
| 1,2,3,7,8 | 0.3 | 0.1 | 1,2,3,7,8 | 0.1 | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 8.5 | 0.2 | H6CDF - Total | 0.4 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.6 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 2.6 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | 0.2 | 0.2 |
| H7CDD - Total | 4.1 | 0.2 | H7CDF - Total | 0.4 | 0.2 |
| 1,2,3,4,6,7,8 | 2.4 | 0.2 | 1,2,3,4,6,7,8 | 0.4 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 28 | 0.3 | O8CDF - Total | 0.5 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 95 |
| 13C-T4CDD | 85 |
| 13C-P5CDF | 88 |
| 13C-P5CDD | 89 |
| 13C-H6CDF | 81 |
| 13C-H6CDD | 81 |
| 13C-H7CDF | 73 |
| 13C-H7CDD | 61 |
| 13C-O8CDD | 66 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

2,3,7,8 - TCDD TEQs (ND=1/2 DL) = 2.7 pg/g
 2,3,7,8 - TCDD TEQs (ND=0) = 2.7 pg/g

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Max Hamilton

 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

| | | | |
|----------------------------|----------------------------------|--|----------------------|
| CLIENT SAMPLE I.D.: | 99VN-075 | AXYS FILE: | L1610-39 |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 22/Apr/1999 |
| CLIENT NO: | 2607 | METHOD NO.: | DX-S-01/Ver.2 |
| SAMPLE TYPE: | Sediment | INSTRUMENT: | GC-HRMS |
| SAMPLE SIZE: | 8.72 g dry | Aluoi Special Forces Base Soil North East | |
| % MOISTURE: | 13 | CONCENTRATION IN: | pg/g |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 7.3 | 0.1 | T4CDF - Total | 1.6 | 0.1 |
| 2,3,7,8 | 5.0 | 0.1 | 2,3,7,8 | 0.4 | 0.1 |
| P5CDD - Total | 7.5 | 0.1 | P5CDF - Total | 1.0 | 0.1 |
| 1,2,3,7,8 | 0.4 | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 10 | 0.2 | H6CDF - Total | 0.9 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.6 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.9 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 9.7 | 0.2 | H7CDF - Total | 1.7 | 0.2 |
| 1,2,3,4,6,7,8 | 4.8 | 0.2 | 1,2,3,4,6,7,8 | 0.8 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 140 | 0.3 | O8CDF - Total | 1.7 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 88 |
| 13C-T4CDD | 82 |
| 13C-P5CDF | 81 |
| 13C-P5CDD | 81 |
| 13C-H6CDF | 84 |
| 13C-H6CDD | 80 |
| 13C-H7CDF | 77 |
| 13C-H7CDD | 58 |
| 13C-O8CDD | 62 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 5.7 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 5.6 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Max Hamilton

 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-077

AXYS FILE: L1610-40

CLIENT: Hatfield Consultants Ltd.

DATE: 22/Apr/1999

CLIENT NO: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 8.86 g dry

**Aluoi Special Forces Base
 Soil
 North Centre**

INSTRUMENT: GC-HRMS

% MOISTURE: 13

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 15 | 0.1 | T4CDF - Total | 2.1 | 0.1 |
| 2,3,7,8 | 12 | 0.1 | 2,3,7,8 | 0.6 | 0.1 |
| P5CDD - Total | 4.9 | 0.1 | P5CDF - Total | 1.5 | 0.1 |
| 1,2,3,7,8 | 0.6 | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | 0.1 | 0.1 |
| H6CDD - Total | 11 | 0.2 | H6CDF - Total | 0.9 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.5 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 1.0 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 6.1 | 0.2 | H7CDF - Total | 1.8 | 0.2 |
| 1,2,3,4,6,7,8 | 3.0 | 0.2 | 1,2,3,4,6,7,8 | 0.9 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 76 | 0.4 | O8CDF - Total | 1.7 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 91 |
| 13C-T4CDD | 72 |
| 13C-P5CDF | 90 |
| 13C-P5CDD | 92 |
| 13C-H6CDF | 87 |
| 13C-H6CDD | 86 |
| 13C-H7CDF | 82 |
| 13C-H7CDD | 69 |
| 13C-O8CDD | 73 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 13 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 13 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Hamilton
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-079

AXYS FILE: L1610-41

CLIENT: Hatfield Consultants Ltd.

DATE: 22/Apr/1999

CLIENT NO: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 9.18 g dry

**Aluoi Special Forces Base
Soil
North West**

INSTRUMENT: GC-HRMS

% MOISTURE: 13

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 15 | 0.1 | T4CDF - Total | 3.0 | 0.1 |
| 2,3,7,8 | 11 | 0.1 | 2,3,7,8 | 0.6 | 0.1 |
| P5CDD - Total | 6.7 | 0.1 | P5CDF - Total | 2.1 | 0.1 |
| 1,2,3,7,8 | 0.7 | 0.1 | 1,2,3,7,8 | 0.1 | 0.1 |
| | | | 2,3,4,7,8 | 0.1 | 0.1 |
| H6CDD - Total | 13 | 0.2 | H6CDF - Total | 1.0 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.6 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 1.1 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 7.0 | 0.2 | H7CDF - Total | 1.8 | 0.2 |
| 1,2,3,4,6,7,8 | 3.4 | 0.2 | 1,2,3,4,6,7,8 | 0.9 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 74 | 0.6 | O8CDF - Total | 1.3 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 84 |
| 13C-T4CDD | 82 |
| 13C-P5CDF | 82 |
| 13C-P5CDD | 81 |
| 13C-H6CDF | 84 |
| 13C-H6CDD | 83 |
| 13C-H7CDF | 75 |
| 13C-H7CDD | 64 |
| 13C-O8CDD | 67 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 12 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 12 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Hamilton
 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001

| | |
|--|----------------------------------|
| CLIENT SAMPLE I.D.: 99VN-081 | AXYS FILE: L1610-42 |
| CLIENT: Hatfield Consultants Ltd. | DATE: 22/Apr/1999 |
| CLIENT NO: 2607 | METHOD NO.: DX-S-01/Ver.2 |
| SAMPLE TYPE: Sediment | INSTRUMENT: GC-HRMS |
| SAMPLE SIZE: 9.55 g dry | CONCENTRATION IN: pg/g |
| % MOISTURE: 11 | |

**Aluoi Special Forces Base
Soil
Centre**

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 6.9 | 0.1 | T4CDF - Total | 1.7 | 0.1 |
| 2,3,7,8 | 5.7 | 0.1 | 2,3,7,8 | 0.5 | 0.1 |
| P5CDD - Total | 1.7 | 0.1 | P5CDF - Total | 0.9 | 0.1 |
| 1,2,3,7,8 | 0.2 | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 5.7 | 0.2 | H6CDF - Total | 0.8 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.4 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.9 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 6.7 | 0.2 | H7CDF - Total | 1.0 | 0.2 |
| 1,2,3,4,6,7,8 | 3.1 | 0.2 | 1,2,3,4,6,7,8 | 0.6 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 210 | 0.5 | O8CDF - Total | 0.6 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 86 |
| 13C-T4CDD | 85 |
| 13C-P5CDF | 82 |
| 13C-P5CDD | 88 |
| 13C-H6CDF | 87 |
| 13C-H6CDD | 82 |
| 13C-H7CDF | 76 |
| 13C-H7CDD | 68 |
| 13C-O8CDD | 67 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 6.3 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 6.2 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Hamilton
Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-083

AXYS FILE: L1610-43

CLIENT: Hatfield Consultants Ltd.

DATE: 22/Apr/1999

CLIENT NO: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 9.17 g dry

**Aluoi Special Forces Base
Soil
Centre West**

INSTRUMENT: GC-HRMS

% MOISTURE: 15

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 15 | 0.1 | T4CDF - Total | 2.2 | 0.1 |
| 2,3,7,8 | 12 | 0.1 | 2,3,7,8 | 0.5 | 0.1 |
| P5CDD - Total | 3.9 | 0.1 | P5CDF - Total | 1.1 | 0.1 |
| 1,2,3,7,8 | 0.6 | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 9.5 | 0.2 | H6CDF - Total | 0.6 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.4 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 1.0 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 8.0 | 0.2 | H7CDF - Total | 0.7 | 0.2 |
| 1,2,3,4,6,7,8 | 3.6 | 0.2 | 1,2,3,4,6,7,8 | 0.4 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 340 | 1.0 | O8CDF - Total | 0.7 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 94 |
| 13C-T4CDD | 90 |
| 13C-P5CDF | 93 |
| 13C-P5CDD | 91 |
| 13C-H6CDF | 95 |
| 13C-H6CDD | 87 |
| 13C-H7CDF | 80 |
| 13C-H7CDD | 63 |
| 13C-O8CDD | 59 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 13 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 13 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Max Hamilton
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-085

AXYS FILE: L1610-44

CLIENT: Hatfield Consultants Ltd.

DATE: 22/Apr/1999

CLIENT NO: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 8.78 g dry

**Aluoi Special Forces Base
 Soil
 Centre East**

INSTRUMENT: GC-HRMS

% MOISTURE: 13

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 24 | 0.1 | T4CDF - Total | 5.8 | 0.1 |
| 2,3,7,8 | 19 | 0.1 | 2,3,7,8 | 0.9 | 0.1 |
| P5CDD - Total | 7.4 | 0.1 | P5CDF - Total | 3.1 | 0.1 |
| 1,2,3,7,8 | 1.0 | 0.1 | 1,2,3,7,8 | 0.2 | 0.1 |
| | | | 2,3,4,7,8 | 0.2 | 0.1 |
| H6CDD - Total | 16 | 0.2 | H6CDF - Total | 1.7 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | 0.3 | 0.2 |
| 1,2,3,6,7,8 | 0.8 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 1.5 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 11 | 0.2 | H7CDF - Total | 1.3 | 0.2 |
| 1,2,3,4,6,7,8 | 5.5 | 0.2 | 1,2,3,4,6,7,8 | 0.8 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 370 | 0.3 | O8CDF - Total | 1.2 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 79 |
| 13C-T4CDD | 80 |
| 13C-P5CDF | 83 |
| 13C-P5CDD | 83 |
| 13C-H6CDF | 80 |
| 13C-H6CDD | 77 |
| 13C-H7CDF | 72 |
| 13C-H7CDD | 71 |
| 13C-O8CDD | 72 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 20 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 20 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McKamilton
 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001

| | |
|--|----------------------------------|
| CLIENT SAMPLE I.D.: 99VN-087 | AXYS FILE: L1610-45 |
| CLIENT: Hatfield Consultants Ltd. | DATE: 22/Apr/1999 |
| CLIENT NO: 2607 | METHOD NO.: DX-S-01/Ver.2 |
| SAMPLE TYPE: Sediment | INSTRUMENT: GC-HRMS |
| SAMPLE SIZE: 8.96 g dry | CONCENTRATION IN: pg/g |
| % MOISTURE: 14 | |

**Aluoi Special Forces Base
Soil
South Centre**

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 26 | 0.1 | T4CDF - Total | 3.4 | 0.1 |
| 2,3,7,8 | 19 | 0.1 | 2,3,7,8 | 0.7 | 0.1 |
| P5CDD - Total | 18 | 0.1 | P5CDF - Total | 2.1 | 0.1 |
| 1,2,3,7,8 | 1.3 | 0.1 | 1,2,3,7,8 | 0.1 | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 16 | 0.2 | H6CDF - Total | 1.1 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.4 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 1.1 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 7.0 | 0.2 | H7CDF - Total | 0.8 | 0.2 |
| 1,2,3,4,6,7,8 | 3.1 | 0.2 | 1,2,3,4,6,7,8 | 0.5 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 320 | 0.5 | O8CDF - Total | 0.8 | 0.3 |

Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 88 |
| 13C-T4CDD | 84 |
| 13C-P5CDF | 90 |
| 13C-P5CDD | 85 |
| 13C-H6CDF | 86 |
| 13C-H6CDD | 81 |
| 13C-H7CDF | 76 |
| 13C-H7CDD | 61 |
| 13C-O8CDD | 62 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 20 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 20 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Lamelle
Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-089

AXYS FILE: L1610-46

CLIENT: Hatfield Consultants Ltd.

DATE: 22/Apr/1999

CLIENT NO: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 9.05 g dry

**Aluoi Special Forces Base
Soil
South East**

INSTRUMENT: GC-HRMS

% MOISTURE: 15

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 14 | 0.1 | T4CDF - Total | 3.6 | 0.1 |
| 2,3,7,8 | 10 | 0.1 | 2,3,7,8 | 0.6 | 0.1 |
| P5CDD - Total | 8.8 | 0.1 | P5CDF - Total | 2.4 | 0.1 |
| 1,2,3,7,8 | 0.6 | 0.1 | 1,2,3,7,8 | 0.1 | 0.1 |
| | | | 2,3,4,7,8 | 0.1 | 0.1 |
| H6CDD - Total | 11 | 0.2 | H6CDF - Total | 1.0 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.5 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 1.4 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 7.3 | 0.2 | H7CDF - Total | 0.9 | 0.2 |
| 1,2,3,4,6,7,8 | 3.3 | 0.2 | 1,2,3,4,6,7,8 | 0.7 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 250 | 0.3 | O8CDF - Total | 0.7 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 93 |
| 13C-T4CDD | 90 |
| 13C-P5CDF | 90 |
| 13C-P5CDD | 91 |
| 13C-H6CDF | 93 |
| 13C-H6CDD | 87 |
| 13C-H7CDF | 83 |
| 13C-H7CDD | 69 |
| 13C-O8CDD | 78 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 11 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 11 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Hamilton
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: 99VN-091

AXYS FILE: L1610-47A

CLIENT: Hatfield Consultants Ltd.

DATE: 22/Apr/1999

CLIENT NO: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 8.88 g dry

**Aluoi Special Forces Base
Soil
South West**

INSTRUMENT: GC-HRMS

% MOISTURE: 12

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 16 | 0.1 | T4CDF - Total | 2.7 | 0.1 |
| 2,3,7,8 | 11 | 0.1 | 2,3,7,8 | 0.5 | 0.1 |
| P5CDD - Total | 13 | 0.1 | P5CDF - Total | 1.6 | 0.1 |
| 1,2,3,7,8 | 0.9 | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 11 | 0.2 | H6CDF - Total | 0.6 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.4 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.8 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 6.6 | 0.2 | H7CDF - Total | 0.4 | 0.2 |
| 1,2,3,4,6,7,8 | 2.9 | 0.2 | 1,2,3,4,6,7,8 | 0.4 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 260 | 0.3 | O8CDF - Total | 0.6 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 85 |
| 13C-T4CDD | 81 |
| 13C-P5CDF | 83 |
| 13C-P5CDD | 86 |
| 13C-H6CDF | 86 |
| 13C-H6CDD | 83 |
| 13C-H7CDF | 80 |
| 13C-H7CDD | 65 |
| 13C-O8CDD | 75 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 12 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 12 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Hamilton
 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001

CLIENT SAMPLE I.D.: 99VN-091

AXYS FILE: L1610-47B

CLIENT: Hatfield Consultants Ltd.

Duplicate

CLIENT NO: 2607

DATE: 22/Apr/1999

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 9.54 g dry

**Aluoi Special Forces Base
Soil (duplicate)
South West**

INSTRUMENT: GC-HRMS

% MOISTURE: 11

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 14 | 0.1 | T4CDF - Total | 2.3 | 0.1 |
| 2,3,7,8 | 11 | 0.1 | 2,3,7,8 | 0.5 | 0.1 |
| P5CDD - Total | 11 | 0.1 | P5CDF - Total | 1.3 | 0.1 |
| 1,2,3,7,8 | 0.9 | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 10 | 0.2 | H6CDF - Total | 0.5 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | 0.3 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | 0.8 | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 6.3 | 0.2 | H7CDF - Total | 0.4 | 0.2 |
| 1,2,3,4,6,7,8 | 2.7 | 0.2 | 1,2,3,4,6,7,8 | 0.4 | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 240 | 0.5 | O8CDF - Total | 0.5 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 110 |
| 13C-T4CDD | 100 |
| 13C-P5CDF | 100 |
| 13C-P5CDD | 110 |
| 13C-H6CDF | 100 |
| 13C-H6CDD | 100 |
| 13C-H7CDF | 100 |
| 13C-H7CDD | 93 |
| 13C-O8CDD | 120 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 12 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 12 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McHamilton
Approved

Section 2

Dioxin/Furan Analysis Reports: Plant and Animal Tissues

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN-278

AXYS FILE: L1825-1 i

CLIENT: Hatfield Consultants Ltd.

DATE: 21-Aug-1999

CLIENT NO.: 2607

SAMPLE TYPE: Tissue

METHOD NO.: DX-T-03/Ver.2

**A So Commune
 Grass Carp Fat**

SAMPLE SIZE: 3.04 g wet

INSTRUMENT: GC-HRMS

% MOISTURE: 4.7

% LIPID: 96

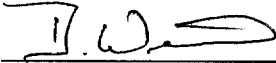
CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 12 | 0.2 | T4CDF - Total | 12 | 0.9 |
| 2,3,7,8 | 8.2 | 0.2 | 2,3,7,8 | 2.8 | 0.9 |
| P5CDD - Total | 1.3 | 0.3 | P5CDF - Total | 4.9 | 0.3 |
| 1,2,3,7,8 | NDR(0.3) | 0.3 | 1,2,3,7,8 | 0.3 | 0.3 |
| | | | 2,3,4,7,8 | 0.5 | 0.3 |
| H6CDD - Total | 0.7 | 0.2 | H6CDF - Total | 0.8 | 0.2 |
| 1,2,3,4,7,8 | NDR(0.2) | 0.2 | 1,2,3,4,7,8 | NDR(0.4) | 0.2 |
| 1,2,3,6,7,8 | NDR(0.3) | 0.2 | 1,2,3,6,7,8 | NDR(0.3) | 0.2 |
| 1,2,3,7,8,9 | NDR(0.2) | 0.2 | 2,3,4,6,7,8 | 0.2 | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 1.0 | 0.3 | H7CDF - Total | 0.2 | 0.3 |
| 1,2,3,4,6,7,8 | 0.7 | 0.3 | 1,2,3,4,6,7,8 | 0.2 | 0.3 |
| | | | 1,2,3,4,7,8,9 | ND | 0.3 |
| O8CDD | 5.8 | 0.3 | O8CDF | NDR(0.2) | 0.2 |

Surrogate Standards % Recovery

| | | | |
|-----------|-----|--|-----------|
| 13C-T4CDF | 97 | 2,3,7,8 - TCDD TEQs (Using NATO I-TEFs) | |
| 13C-T4CDD | 100 | 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 8.9 pg/g |
| 13C-P5CDF | 100 | 2,3,7,8 - TCDD TEQs (ND=0) = | 8.77 pg/g |
| 13C-P5CDD | 86 | | |
| 13C-H6CDF | 98 | | |
| 13C-H6CDD | 100 | | |
| 13C-H7CDF | 91 | | |
| 13C-H7CDD | 88 | | |
| 13C-O8CDD | 100 | | |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001A

CLIENT SAMPLE I.D.: 99VN-276

AXYS FILE: L1825-2 i

CLIENT: Hatfield Consultants Ltd.

DATE: 21-Aug-1999

CLIENT NO.: 2607

SAMPLE TYPE: Tissue

METHOD NO.: DX-T-03/Ver.2

**A So Commune
Grass Carp Liver**

SAMPLE SIZE: 5.05 g wet

INSTRUMENT: GC-HRMS

% MOISTURE: 63

% LIPID: 14

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 1.5 | 0.2 | T4CDF - Total | 1.6 | 0.1 |
| 2,3,7,8 | 1.1 | 0.2 | 2,3,7,8 | 0.3 | 0.1 |
| P5CDD - Total | 0.2 | 0.2 | P5CDF - Total | 0.4 | 0.1 |
| 1,2,3,7,8 | ND | 0.2 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | ND | 0.1 | H6CDF - Total | 0.2 | 0.1 |
| 1,2,3,4,7,8 | ND | 0.1 | 1,2,3,4,7,8 | 0.1 | 0.1 |
| 1,2,3,6,7,8 | ND | 0.1 | 1,2,3,6,7,8 | ND | 0.1 |
| 1,2,3,7,8,9 | ND | 0.1 | 2,3,4,6,7,8 | ND | 0.1 |
| | | | 1,2,3,7,8,9 | ND | 0.1 |
| H7CDD - Total | 0.6 | 0.2 | H7CDF - Total | ND | 0.1 |
| 1,2,3,4,6,7,8 | 0.2 | 0.2 | 1,2,3,4,6,7,8 | ND | 0.1 |
| | | | 1,2,3,4,7,8,9 | ND | 0.1 |
| O8CDD | 2.3 | 0.2 | O8CDF | 0.1 | 0.1 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 86 |
| 13C-T4CDD | 89 |
| 13C-P5CDF | 89 |
| 13C-P5CDD | 78 |
| 13C-H6CDF | 90 |
| 13C-H6CDD | 91 |
| 13C-H7CDF | 84 |
| 13C-H7CDD | 84 |
| 13C-O8CDD | 88 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 1.26 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 1.14 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.



Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

| | | | |
|---|---------------------------|-------------|------------------------|
| CLIENT SAMPLE I.D.: | 99VN-281 | AXYS FILE: | L1825-3A i |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 21-Aug-1999 |
| CLIENT NO.: | 2607 | REVISED: | 13-Oct-1999 |
| SAMPLE TYPE: | Tissue | METHOD NO.: | DX-T-03/Ver.2 |
| A So Commune Grass Carp Muscle | | | |
| SAMPLE SIZE: | 9.85 g wet | INSTRUMENT: | GC-HRMS |
| % MOISTURE: | 69 | % LIPID: | 4.7 |
| | | | CONCENTRATION IN: pg/g |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.5 | 0.1 | T4CDF - Total | 0.3 | 0.1 |
| 2,3,7,8 | 0.4 | 0.1 | 2,3,7,8 | 0.1 | 0.1 |
| P5CDD - Total | 0.1 | 0.1 | P5CDF - Total | ND | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | ND | 0.1 | H6CDF - Total | ND | 0.1 |
| 1,2,3,4,7,8 | ND | 0.1 | 1,2,3,4,7,8 | ND | 0.1 |
| 1,2,3,6,7,8 | ND | 0.1 | 1,2,3,6,7,8 | ND | 0.1 |
| 1,2,3,7,8,9 | ND | 0.1 | 2,3,4,6,7,8 | ND | 0.1 |
| | | | 1,2,3,7,8,9 | ND | 0.1 |
| H7CDD - Total | 0.1 | 0.10 | H7CDF - Total | ND | 0.1 |
| 1,2,3,4,6,7,8 | 0.1 | 0.10 | 1,2,3,4,6,7,8 | NDR(0.1) | 0.1 |
| | | | 1,2,3,4,7,8,9 | ND | 0.1 |
| O8CDD | 1.2 | 0.1 | O8CDF | ND | 0.1 |

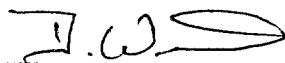
Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 83 |
| 13C-T4CDD | 87 |
| 13C-P5CDF | 93 |
| 13C-P5CDD | 79 |
| 13C-H6CDF | 87 |
| 13C-H6CDD | 89 |
| 13C-H7CDF | 77 |
| 13C-H7CDD | 75 |
| 13C-O8CDD | 81 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.44 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.37 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN-281

AXYS FILE: L1825-3B i

CLIENT: Hatfield Consultants Ltd.

DATE: 21-Aug-1999

CLIENT NO.: 2607

REVISED: 13-Oct-1999

SAMPLE TYPE: Tissue

METHOD NO.: DX-T-03/Ver.2

SAMPLE SIZE: 10.03 g wet

A So Commune
Grass Carp Muscle (duplicate)

INSTRUMENT: GC-HRMS

% MOISTURE: 72

% LIPID: 4.7

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.6 | 0.1 | T4CDF - Total | 0.3 | 0.1 |
| 2,3,7,8 | 0.4 | 0.1 | 2,3,7,8 | 0.1 | 0.1 |
| P5CDD - Total | 0.1 | 0.1 | P5CDF - Total | ND | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | ND | 0.1 | H6CDF - Total | ND | 0.1 |
| 1,2,3,4,7,8 | ND | 0.1 | 1,2,3,4,7,8 | ND | 0.1 |
| 1,2,3,6,7,8 | ND | 0.1 | 1,2,3,6,7,8 | ND | 0.1 |
| 1,2,3,7,8,9 | ND | 0.1 | 2,3,4,6,7,8 | ND | 0.1 |
| | | | 1,2,3,7,8,9 | ND | 0.1 |
| H7CDD - Total | 0.3 | 0.1 | H7CDF - Total | ND | 0.1 |
| 1,2,3,4,6,7,8 | 0.2 | 0.1 | 1,2,3,4,6,7,8 | ND | 0.1 |
| | | | 1,2,3,4,7,8,9 | ND | 0.1 |
| O8CDD | 1.9 | 0.1 | O8CDF | ND | 0.1 |

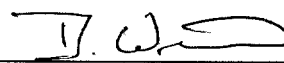
Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 78 |
| 13C-T4CDD | 80 |
| 13C-P5CDF | 83 |
| 13C-P5CDD | 67 |
| 13C-H6CDF | 80 |
| 13C-H6CDD | 82 |
| 13C-H7CDF | 72 |
| 13C-H7CDD | 70 |
| 13C-O8CDD | 79 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.52 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.43 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN-451

AXYS FILE: L1825-8 i

CLIENT: Hatfield Consultants Ltd.

DATE: 21-Aug-1999

CLIENT NO.: 2607

SAMPLE TYPE: Tissue

METHOD NO.: DX-T-03/Ver.2

**A So Commune
 Grass Carp Fat**

SAMPLE SIZE: 3.11 g wet

INSTRUMENT: GC-HRMS

% MOISTURE: 24

% LIPID: 69

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 18 | 0.3 | T4CDF - Total | 11 | 0.2 |
| 2,3,7,8 | 14 | 0.3 | 2,3,7,8 | 2.2 | 0.2 |
| P5CDD - Total | 3.6 | 0.4 | P5CDF - Total | 1.9 | 0.3 |
| 1,2,3,7,8 | 0.6 | 0.4 | 1,2,3,7,8 | ND | 0.3 |
| | | | 2,3,4,7,8 | ND | 0.3 |
| H6CDD - Total | 0.5 | 0.2 | H6CDF - Total | 0.2 | 0.3 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.3 |
| 1,2,3,6,7,8 | ND | 0.2 | 1,2,3,6,7,8 | ND | 0.3 |
| 1,2,3,7,8,9 | ND | 0.2 | 2,3,4,6,7,8 | ND | 0.3 |
| | | | 1,2,3,7,8,9 | ND | 0.3 |
| H7CDD - Total | 0.6 | 0.3 | H7CDF - Total | ND | 0.3 |
| 1,2,3,4,6,7,8 | NDR(0.5) | 0.3 | 1,2,3,4,6,7,8 | ND | 0.3 |
| | | | 1,2,3,4,7,8,9 | ND | 0.3 |
| O8CDD | 3.9 | 0.4 | O8CDF | ND | 0.2 |


Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 82 |
| 13C-T4CDD | 86 |
| 13C-P5CDF | 84 |
| 13C-P5CDD | 73 |
| 13C-H6CDF | 83 |
| 13C-H6CDD | 83 |
| 13C-H7CDF | 70 |
| 13C-H7CDD | 70 |
| 13C-O8CDD | 71 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 14.6 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 14.4 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN-223

AXYS FILE: L1825-16 i

CLIENT: Hatfield Consultants Ltd.

DATE: 21-Aug-1999

CLIENT NO.: 2607

SAMPLE TYPE: Tissue **Huong Lam Commune**
Grass Carp Fat

METHOD NO.: DX-T-03/Ver.2

SAMPLE SIZE: 3.18 g wet

INSTRUMENT: GC-HRMS

% MOISTURE: 12

% LIPID: 80

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 8.2 | 0.3 | T4CDF - Total | 17 | 0.2 |
| 2,3,7,8 | 2.8 | 0.3 | 2,3,7,8 | 2.3 | 0.2 |
| P5CDD - Total | 0.8 | 0.3 | P5CDF - Total | 31 | 0.3 |
| 1,2,3,7,8 | 0.8 | 0.3 | 1,2,3,7,8 | 0.5 | 0.3 |
| | | | 2,3,4,7,8 | ND | 0.3 |
| H6CDD - Total | 0.4 | 0.3 | H6CDF - Total | 0.9 | 0.3 |
| 1,2,3,4,7,8 | ND | 0.3 | 1,2,3,4,7,8 | 0.5 | 0.3 |
| 1,2,3,6,7,8 | ND | 0.3 | 1,2,3,6,7,8 | ND | 0.3 |
| 1,2,3,7,8,9 | ND | 0.3 | 2,3,4,6,7,8 | ND | 0.3 |
| | | | 1,2,3,7,8,9 | ND | 0.3 |
| H7CDD - Total | 1.2 | 0.3 | H7CDF - Total | ND | 0.4 |
| 1,2,3,4,6,7,8 | 0.6 | 0.3 | 1,2,3,4,6,7,8 | ND | 0.4 |
| | | | 1,2,3,4,7,8,9 | ND | 0.4 |
| O8CDD | 3.9 | 0.4 | O8CDF | ND | 0.2 |

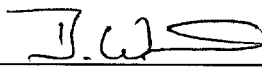
Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 86 |
| 13C-T4CDD | 89 |
| 13C-P5CDF | 92 |
| 13C-P5CDD | 76 |
| 13C-H6CDF | 83 |
| 13C-H6CDD | 85 |
| 13C-H7CDF | 72 |
| 13C-H7CDD | 69 |
| 13C-O8CDD | 74 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 3.61 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 3.44 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN-151

AXYS FILE: L1825-19 i

CLIENT: Hatfield Consultants Ltd.

DATE: 21-Aug-1999

CLIENT NO.: 2607

SAMPLE TYPE: Tissue

METHOD NO.: DX-T-03/Ver.2

**Hong Thuong Commune
 Grass Carp Fat**

SAMPLE SIZE: 3.00 g wet

INSTRUMENT: GC-HRMS

% MOISTURE: 8.7

% LIPID: 82

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 8.4 | 0.4 | T4CDF - Total | 19 | 0.3 |
| 2,3,7,8 | 4.4 | 0.4 | 2,3,7,8 | 3.4 | 0.3 |
| P5CDD - Total | 0.4 | 0.3 | P5CDF - Total | 6.9 | 0.4 |
| 1,2,3,7,8 | ND | 0.3 | 1,2,3,7,8 | ND | 0.4 |
| | | | 2,3,4,7,8 | ND | 0.4 |
| H6CDD - Total | 2.1 | 0.2 | H6CDF - Total | 1.3 | 0.2 |
| 1,2,3,4,7,8 | 0.3 | 0.2 | 1,2,3,4,7,8 | 0.6 | 0.2 |
| 1,2,3,6,7,8 | 0.5 | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | ND | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 2.5 | 0.3 | H7CDF - Total | ND | 0.3 |
| 1,2,3,4,6,7,8 | 1.2 | 0.3 | 1,2,3,4,6,7,8 | ND | 0.3 |
| | | | 1,2,3,4,7,8,9 | ND | 0.3 |
| O8CDD | 6.7 | 0.5 | O8CDF | ND | 0.4 |


Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 86 |
| 13C-T4CDD | 85 |
| 13C-P5CDF | 82 |
| 13C-P5CDD | 67 |
| 13C-H6CDF | 79 |
| 13C-H6CDD | 83 |
| 13C-H7CDF | 65 |
| 13C-H7CDD | 62 |
| 13C-O8CDD | 59 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 5.09 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 4.87 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

00082

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN-284

AXYS FILE: L1825-20 i

CLIENT: Hatfield Consultants Ltd.

DATE: 21-Aug-1999

CLIENT NO.: 2607

SAMPLE TYPE: Tissue

METHOD NO.: DX-T-03/Ver.2

SAMPLE SIZE: 4.08 g wet

**A So Commune
Common Carp Fat**

INSTRUMENT: GC-HRMS

% MOISTURE: 66

% LIPID: 7.8

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 1.9 | 0.2 | T4CDF - Total | 0.6 | 0.1 |
| 2,3,7,8 | 1.9 | 0.2 | 2,3,7,8 | 0.4 | 0.1 |
| P5CDD - Total | ND | 0.2 | P5CDF - Total | ND | 0.2 |
| 1,2,3,7,8 | ND | 0.2 | 1,2,3,7,8 | ND | 0.2 |
| | | | 2,3,4,7,8 | ND | 0.2 |
| H6CDD - Total | ND | 0.1 | H6CDF - Total | ND | 0.2 |
| 1,2,3,4,7,8 | ND | 0.1 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | ND | 0.1 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | ND | 0.1 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 0.7 | 0.2 | H7CDF - Total | ND | 0.3 |
| 1,2,3,4,6,7,8 | 0.3 | 0.2 | 1,2,3,4,6,7,8 | ND | 0.3 |
| | | | 1,2,3,4,7,8,9 | ND | 0.3 |
| O8CDD | 3.3 | 0.4 | O8CDF | ND | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 87 |
| 13C-T4CDD | 88 |
| 13C-P5CDF | 98 |
| 13C-P5CDD | 81 |
| 13C-H6CDF | 86 |
| 13C-H6CDD | 86 |
| 13C-H7CDF | 70 |
| 13C-H7CDD | 66 |
| 13C-O8CDD | 58 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 2.12 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 1.95 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN-124

AXYS FILE: L1825-24 i

CLIENT: Hatfield Consultants Ltd.

DATE: 21-Aug-1999

CLIENT NO.: 2607

SAMPLE TYPE: Tissue

METHOD NO.: DX-T-03/Ver.2

**Hong Thuong Commune
Common Carp Liver**

SAMPLE SIZE: 2.53 g wet

INSTRUMENT: GC-HRMS

% MOISTURE: 75

% LIPID: 5.0

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 2.8 | 0.2 | T4CDF - Total | ND | 0.1 |
| 2,3,7,8 | 2.8 | 0.2 | 2,3,7,8 | NDR(0.2) | 0.1 |
| P5CDD - Total | ND | 0.5 | P5CDF - Total | ND | 0.3 |
| 1,2,3,7,8 | ND | 0.5 | 1,2,3,7,8 | ND | 0.3 |
| | | | 2,3,4,7,8 | ND | 0.3 |
| H6CDD - Total | ND | 0.2 | H6CDF - Total | ND | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | ND | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | ND | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 1.0 | 0.3 | H7CDF - Total | ND | 0.3 |
| 1,2,3,4,6,7,8 | 1.0 | 0.3 | 1,2,3,4,6,7,8 | ND | 0.3 |
| | | | 1,2,3,4,7,8,9 | ND | 0.3 |
| O8CDD | 8.7 | 0.3 | O8CDF | ND | 0.3 |


Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 88 |
| 13C-T4CDD | 91 |
| 13C-P5CDF | 76 |
| 13C-P5CDD | 67 |
| 13C-H6CDF | 84 |
| 13C-H6CDD | 88 |
| 13C-H7CDF | 84 |
| 13C-H7CDD | 84 |
| 13C-O8CDD | 94 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 3.12 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 2.83 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN-499

AXYS FILE: L1825-25 i2

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Aug-1999

CLIENT NO.: 2607

SAMPLE TYPE: Tissue

**Xa Nham Commune
(Pa Du Stream)
Common Carp Liver**

METHOD NO.: DX-T-03/Ver.2

SAMPLE SIZE: 5.05 g wet

INSTRUMENT: GC-HRMS

% MOISTURE: 71

% LIPID: 2.4

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.7 | 0.1 | T4CDF - Total | 0.2 | 0.1 |
| 2,3,7,8 | 0.7 | 0.1 | 2,3,7,8 | 0.2 | 0.1 |
| P5CDD - Total | 0.1 | 0.1 | P5CDF - Total | ND | 0.1 |
| 1,2,3,7,8 | 0.1 | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | NDR(0.1) | 0.1 |
| H6CDD - Total | 0.1 | 0.1 | H6CDF - Total | 0.1 | 0.1 |
| 1,2,3,4,7,8 | ND | 0.1 | 1,2,3,4,7,8 | 0.1 | 0.1 |
| 1,2,3,6,7,8 | 0.1 | 0.1 | 1,2,3,6,7,8 | ND | 0.1 |
| 1,2,3,7,8,9 | 0.1 | 0.1 | 2,3,4,6,7,8 | ND | 0.1 |
| | | | 1,2,3,7,8,9 | NDR(0.01) | 0.1 |
| H7CDD - Total | 0.4 | 0.1 | H7CDF - Total | ND | 0.1 |
| 1,2,3,4,6,7,8 | 0.2 | 0.1 | 1,2,3,4,6,7,8 | ND | 0.1 |
| | | | 1,2,3,4,7,8,9 | ND | 0.1 |
| O8CDD | 1.6 | 0.1 | O8CDF | 0.1 | 0.1 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 77 |
| 13C-T4CDD | 80 |
| 13C-P5CDF | 70 |
| 13C-P5CDD | 81 |
| 13C-H6CDF | 72 |
| 13C-H6CDD | 69 |
| 13C-H7CDF | 63 |
| 13C-H7CDD | 57 |
| 13C-O8CDD | 52 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.8 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.8 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.



Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN-329

AXYS FILE: L1825-26 i2

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Aug-1999

CLIENT NO.: 2607

SAMPLE TYPE: Tissue

METHOD NO.: DX-T-03/Ver.2

A So Commune

SAMPLE SIZE: 3.69 g wet

Duck Fat

INSTRUMENT: GC-HRMS

% MOISTURE: 13

% LIPID: 70

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 94 | 0.1 | T4CDF - Total | 35 | 0.1 |
| 2,3,7,8 | 82 | 0.1 | 2,3,7,8 | 11 | 0.1 |
| P5CDD - Total | 21 | 0.1 | P5CDF - Total | 26 | 0.1 |
| 1,2,3,7,8 | 5.1 | 0.1 | 1,2,3,7,8 | 1.8 | 0.1 |
| | | | 2,3,4,7,8 | 2.5 | 0.1 |
| H6CDD - Total | 11 | 0.1 | H6CDF - Total | 5.3 | 0.1 |
| 1,2,3,4,7,8 | 1.0 | 0.1 | 1,2,3,4,7,8 | 0.9 | 0.1 |
| 1,2,3,6,7,8 | 2.0 | 0.1 | 1,2,3,6,7,8 | 0.8 | 0.1 |
| 1,2,3,7,8,9 | 0.7 | 0.1 | 2,3,4,6,7,8 | 0.7 | 0.1 |
| | | | 1,2,3,7,8,9 | 0.1 | 0.1 |
| H7CDD - Total | 5.5 | 0.1 | H7CDF - Total | 1.1 | 0.1 |
| 1,2,3,4,6,7,8 | 3.3 | 0.1 | 1,2,3,4,6,7,8 | 0.5 | 0.1 |
| | | | 1,2,3,4,7,8,9 | 0.1 | 0.1 |
| O8CDD | 24 | 0.1 | O8CDF | 0.9 | 0.1 |


Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 83 |
| 13C-T4CDD | 90 |
| 13C-P5CDF | 90 |
| 13C-P5CDD | 90 |
| 13C-H6CDF | 93 |
| 13C-H6CDD | 85 |
| 13C-H7CDF | 78 |
| 13C-H7CDD | 84 |
| 13C-O8CDD | 89 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 87 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 87 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN-355

AXYS FILE: L1825-27 I2

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Aug-1999

CLIENT NO.: 2607

SAMPLE TYPE: Tissue

METHOD NO.: DX-T-03/Ver.2

**Hong Van Commune
 Duck Fat**

SAMPLE SIZE: 3.06 g wet

INSTRUMENT: GC-HRMS

% MOISTURE: 3.2

% LIPID: 87

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 4.2 | 0.1 | T4CDF - Total | 12 | 0.1 |
| 2,3,7,8 | 1.1 | 0.1 | 2,3,7,8 | 2.0 | 0.1 |
| P5CDD - Total | 2.1 | 0.1 | P5CDF - Total | 5.1 | 0.1 |
| 1,2,3,7,8 | 0.9 | 0.1 | 1,2,3,7,8 | 0.6 | 0.1 |
| | | | 2,3,4,7,8 | 0.7 | 0.1 |
| H6CDD - Total | 8.3 | 0.1 | H6CDF - Total | 1.6 | 0.1 |
| 1,2,3,4,7,8 | 0.8 | 0.1 | 1,2,3,4,7,8 | 0.5 | 0.1 |
| 1,2,3,6,7,8 | 1.4 | 0.1 | 1,2,3,6,7,8 | 0.3 | 0.1 |
| 1,2,3,7,8,9 | 1.4 | 0.1 | 2,3,4,6,7,8 | 0.2 | 0.1 |
| | | | 1,2,3,7,8,9 | 0.1 | 0.1 |
| H7CDD - Total | 7.2 | 0.1 | H7CDF - Total | 0.3 | 0.1 |
| 1,2,3,4,6,7,8 | 4.1 | 0.1 | 1,2,3,4,6,7,8 | 0.2 | 0.1 |
| | | | 1,2,3,4,7,8,9 | 0.1 | 0.1 |
| O8CDD | 27 | 0.2 | O8CDF | 0.2 | 0.1 |

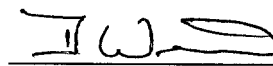
Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 86 |
| 13C-T4CDD | 92 |
| 13C-P5CDF | 85 |
| 13C-P5CDD | 89 |
| 13C-H6CDF | 87 |
| 13C-H6CDD | 85 |
| 13C-H7CDF | 82 |
| 13C-H7CDD | 81 |
| 13C-O8CDD | 88 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 2.7 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 2.7 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN-482

AXYS FILE: L1825-28 i2

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Aug-1999

CLIENT NO.: 2607

SAMPLE TYPE: Tissue

**Son Thuy Commune
(Bo Dot Market)
Pig Fat**

METHOD NO.: DX-T-03/Ver.2

SAMPLE SIZE: 3.00 g wet

INSTRUMENT: GC-HRMS

% MOISTURE: 4.4

% LIPID: 99

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.1 | 0.1 | T4CDF - Total | ND | 0.1 |
| 2,3,7,8 | 0.1 | 0.1 | 2,3,7,8 | ND | 0.1 |
| P5CDD - Total | ND | 0.1 | P5CDF - Total | ND | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | NDR(0.1) | 0.1 |
| H6CDD - Total | 0.2 | 0.1 | H6CDF - Total | 0.8 | 0.1 |
| 1,2,3,4,7,8 | NDR(0.1) | 0.1 | 1,2,3,4,7,8 | 0.6 | 0.1 |
| 1,2,3,6,7,8 | 0.1 | 0.1 | 1,2,3,6,7,8 | 0.2 | 0.1 |
| 1,2,3,7,8,9 | ND | 0.1 | 2,3,4,6,7,8 | ND | 0.1 |
| | | | 1,2,3,7,8,9 | ND | 0.1 |
| H7CDD - Total | 0.5 | 0.1 | H7CDF - Total | 0.6 | 0.1 |
| 1,2,3,4,6,7,8 | 0.5 | 0.1 | 1,2,3,4,6,7,8 | 0.6 | 0.1 |
| | | | 1,2,3,4,7,8,9 | NDR(0.1) | 0.1 |
| O8CDD | 2.6 | 0.1 | O8CDF | NDR(0.2) | 0.1 |

Surrogate Standards % Recovery

| | | | |
|-----------|-----|--|----------|
| 13C-T4CDF | 82 | 2,3,7,8 - TCDD TEQs (Using NATO I-TEFs) | |
| 13C-T4CDD | 87 | 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.3 pg/g |
| 13C-P5CDF | 79 | 2,3,7,8 - TCDD TEQs (ND=0) = | 0.2 pg/g |
| 13C-P5CDD | 110 | | |
| 13C-H6CDF | 83 | | |
| 13C-H6CDD | 82 | | |
| 13C-H7CDF | 73 | | |
| 13C-H7CDD | 70 | | |
| 13C-O8CDD | 77 | | |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

| | | | |
|---------------------|---------------------------|----------------------|---------------|
| CLIENT SAMPLE I.D.: | 99VN-694 | AXYS FILE: | L1825-29 i2 |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 28-Aug-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-T-03/Ver.2 |
| SAMPLE TYPE: | Tissue | Aluoi Commune | |
| | | (#91 Market) | |
| SAMPLE SIZE: | 3.76 g wet | Pig Fat | |
| % MOISTURE: | 5.8 | % LIPID: | 77 |
| | | CONCENTRATION IN: | pg/g |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.1 | T4CDF - Total | ND | 0.1 |
| 2,3,7,8 | NDR(0.2) | 0.1 | 2,3,7,8 | ND | 0.1 |
| P5CDD - Total | ND | 0.1 | P5CDF - Total | ND | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | NDR(0.2) | 0.1 |
| H6CDD - Total | ND | 0.1 | H6CDF - Total | 2.2 | 0.1 |
| 1,2,3,4,7,8 | ND | 0.1 | 1,2,3,4,7,8 | 1.5 | 0.1 |
| 1,2,3,6,7,8 | NDR(0.6) | 0.1 | 1,2,3,6,7,8 | 0.6 | 0.1 |
| 1,2,3,7,8,9 | NDR(0.1) | 0.1 | 2,3,4,6,7,8 | NDR(0.1) | 0.1 |
| | | | 1,2,3,7,8,9 | ND | 0.1 |
| H7CDD - Total | 3.1 | 0.1 | H7CDF - Total | 3.5 | 0.1 |
| 1,2,3,4,6,7,8 | 3.1 | 0.1 | 1,2,3,4,6,7,8 | 2.6 | 0.1 |
| | | | 1,2,3,4,7,8,9 | 0.7 | 0.1 |
| O8CDD | 9.8 | 0.1 | O8CDF | 0.8 | 0.1 |


Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 88 |
| 13C-T4CDD | 100 |
| 13C-P5CDF | 93 |
| 13C-P5CDD | 98 |
| 13C-H6CDF | 100 |
| 13C-H6CDD | 93 |
| 13C-H7CDF | 82 |
| 13C-H7CDD | 85 |
| 13C-O8CDD | 91 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.4 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.3 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN-690

AXYS FILE: L1825-30A i2

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Aug-1999

CLIENT NO.: 2607

SAMPLE TYPE: Tissue
Huong Lam Commune
(#91 Market)
Cow Fat

METHOD NO.: DX-T-03/Ver.2

SAMPLE SIZE: 3.12 g wet

INSTRUMENT: GC-HRMS

% MOISTURE: 11

% LIPID: 86

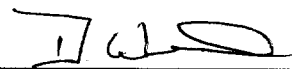
CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.2 | 0.1 | T4CDF - Total | ND | 0.1 |
| 2,3,7,8 | 0.1 | 0.1 | 2,3,7,8 | ND | 0.1 |
| P5CDD - Total | ND | 0.1 | P5CDF - Total | 0.1 | 0.1 |
| 1,2,3,7,8 | NDR(0.1) | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | 0.1 | 0.1 |
| H6CDD - Total | 0.3 | 0.1 | H6CDF - Total | 0.3 | 0.1 |
| 1,2,3,4,7,8 | ND | 0.1 | 1,2,3,4,7,8 | 0.1 | 0.1 |
| 1,2,3,6,7,8 | 0.1 | 0.1 | 1,2,3,6,7,8 | NDR(0.1) | 0.1 |
| 1,2,3,7,8,9 | NDR(0.1) | 0.1 | 2,3,4,6,7,8 | 0.1 | 0.1 |
| | | | 1,2,3,7,8,9 | ND | 0.1 |
| H7CDD - Total | 0.3 | 0.1 | H7CDF - Total | ND | 0.1 |
| 1,2,3,4,6,7,8 | NDR(0.2) | 0.1 | 1,2,3,4,6,7,8 | NDR(0.1) | 0.1 |
| | | | 1,2,3,4,7,8,9 | ND | 0.1 |
| O8CDD | 1.1 | 0.1 | O8CDF | NDR(0.1) | 0.1 |

Surrogate Standards % Recovery

| | | | |
|-----------|----|--|----------|
| 13C-T4CDF | 75 | 2,3,7,8 - TCDD TEQs (Using NATO I-TEFs) | |
| 13C-T4CDD | 76 | 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.3 pg/g |
| 13C-P5CDF | 74 | 2,3,7,8 - TCDD TEQs (ND=0) = | 0.2 pg/g |
| 13C-P5CDD | 90 | | |
| 13C-H6CDF | 87 | | |
| 13C-H6CDD | 84 | | |
| 13C-H7CDF | 79 | | |
| 13C-H7CDD | 75 | | |
| 13C-O8CDD | 89 | | |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

| | | | | |
|---------------------|---------------------------|----------------------------|-------------------|---------------|
| CLIENT SAMPLE I.D.: | 99VN-690 | | AXYS FILE: | L1825-30B i2 |
| CLIENT: | Hatfield Consultants Ltd. | | DUPLICATE | |
| CLIENT NO.: | 2607 | | DATE: | 28-Aug-1999 |
| SAMPLE TYPE: | Tissue | Huong Lam Commune | METHOD NO.: | DX-T-03/Ver.2 |
| | | (#91 Market) | INSTRUMENT: | GC-HRMS |
| SAMPLE SIZE: | 3.07 g wet | Cow Fat (duplicate) | CONCENTRATION IN: | pg/g |
| % MOISTURE: | 11 | % LIPID: | 88 | |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.1 | 0.1 | T4CDF - Total | ND | 0.1 |
| 2,3,7,8 | 0.1 | 0.1 | 2,3,7,8 | ND | 0.1 |
| P5CDD - Total | ND | 0.1 | P5CDF - Total | 0.1 | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | 0.1 | 0.1 |
| H6CDD - Total | 0.1 | 0.1 | H6CDF - Total | 0.3 | 0.1 |
| 1,2,3,4,7,8 | ND | 0.1 | 1,2,3,4,7,8 | 0.2 | 0.1 |
| 1,2,3,6,7,8 | NDR(0.1) | 0.1 | 1,2,3,6,7,8 | 0.1 | 0.1 |
| 1,2,3,7,8,9 | 0.1 | 0.1 | 2,3,4,6,7,8 | 0.1 | 0.1 |
| | | | 1,2,3,7,8,9 | ND | 0.1 |
| H7CDD - Total | ND | 0.1 | H7CDF - Total | ND | 0.1 |
| 1,2,3,4,6,7,8 | NDR(0.2) | 0.1 | 1,2,3,4,6,7,8 | NDR(0.1) | 0.1 |
| | | | 1,2,3,4,7,8,9 | ND | 0.1 |
| O8CDD | 1.1 | 0.1 | O8CDF | NDR(0.1) | 0.1 |

Surrogate Standards % Recovery


| | |
|-----------|-----|
| 13C-T4CDF | 85 |
| 13C-T4CDD | 90 |
| 13C-P5CDF | 86 |
| 13C-P5CDD | 110 |
| 13C-H6CDF | 95 |
| 13C-H6CDD | 89 |
| 13C-H7CDF | 80 |
| 13C-H7CDD | 82 |
| 13C-O8CDD | 94 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

2,3,7,8 - TCDD TEQs (ND=1/2 DL) = 0.3 pg/g

2,3,7,8 - TCDD TEQs (ND=0) = 0.2 pg/g

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001A

CLIENT SAMPLE I.D.: 99VN-332

AXYS FILE: L1825-34 i2

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Aug-1999

CLIENT NO.: 2607

SAMPLE TYPE: Tissue

METHOD NO.: DX-T-03/Ver.2

**Hong Van Commune
Rice**

SAMPLE SIZE: 10.2 g wet

INSTRUMENT: GC-HRMS

% MOISTURE: 2.6

% LIPID: 0.61

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.1 | T4CDF - Total | ND | 0.1 |
| 2,3,7,8 | ND | 0.1 | 2,3,7,8 | ND | 0.1 |
| P5CDD - Total | ND | 0.1 | P5CDF - Total | ND | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | ND | 0.1 | H6CDF - Total | ND | 0.1 |
| 1,2,3,4,7,8 | ND | 0.1 | 1,2,3,4,7,8 | ND | 0.1 |
| 1,2,3,6,7,8 | ND | 0.1 | 1,2,3,6,7,8 | ND | 0.1 |
| 1,2,3,7,8,9 | ND | 0.1 | 2,3,4,6,7,8 | ND | 0.1 |
| | | | 1,2,3,7,8,9 | ND | 0.1 |
| H7CDD - Total | ND | 0.1 | H7CDF - Total | ND | 0.1 |
| 1,2,3,4,6,7,8 | ND | 0.1 | 1,2,3,4,6,7,8 | ND | 0.1 |
| | | | 1,2,3,4,7,8,9 | ND | 0.1 |
| O8CDD | 0.2 | 0.1 | O8CDF | ND | 0.1 |

Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 81 |
| 13C-T4CDD | 85 |
| 13C-P5CDF | 79 |
| 13C-P5CDD | 120 |
| 13C-H6CDF | 84 |
| 13C-H6CDD | 81 |
| 13C-H7CDF | 73 |
| 13C-H7CDD | 76 |
| 13C-O8CDD | 83 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.14 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.00 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP. OF 314/307

AXYS FILE: L1825-35A i

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Aug-1999

CLIENT NO.: 2607

REVISED: 17-Sep-1999

SAMPLE TYPE: Tissue

METHOD NO.: DX-T-03/Ver.2

A So Commune
Grass Carp Fat

SAMPLE SIZE: 3.04 g wet

INSTRUMENT: GC-HRMS

% MOISTURE: 3

% LIPID: 91

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 5.6 | 0.3 | T4CDF - Total | 16 | 0.6 |
| 2,3,7,8 | 3.3 | 0.3 | 2,3,7,8 | 1.8 | 0.6 |
| P5CDD - Total | 1.8 | 0.3 | P5CDF - Total | 3.2 | 0.2 |
| 1,2,3,7,8 | 0.5 | 0.3 | 1,2,3,7,8 | ND | 0.2 |
| | | | 2,3,4,7,8 | 0.6 | 0.2 |
| H6CDD - Total | 1.1 | 0.3 | H6CDF - Total | 0.4 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.3 | 1,2,3,4,7,8 | NDR(0.3) | 0.2 |
| 1,2,3,6,7,8 | NDR(0.3) | 0.3 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | ND | 0.3 | 2,3,4,6,7,8 | NDR(0.2) | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 0.5 | 0.4 | H7CDF - Total | ND | 0.3 |
| 1,2,3,4,6,7,8 | ND | 0.4 | 1,2,3,4,6,7,8 | ND | 0.3 |
| | | | 1,2,3,4,7,8,9 | ND | 0.3 |
| O8CDD | 2.2 | 0.4 | O8CDF | ND | 0.4 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 90 |
| 13C-T4CDD | 85 |
| 13C-P5CDF | 86 |
| 13C-P5CDD | 87 |
| 13C-H6CDF | 91 |
| 13C-H6CDD | 92 |
| 13C-H7CDF | 77 |
| 13C-H7CDD | 74 |
| 13C-O8CDD | 68 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 4.2 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 4.1 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP. OF 314/307

AXYS FILE: L1825-35B i

CLIENT: Hatfield Consultants Ltd.
 CLIENT NO.: 2607
 SAMPLE TYPE: Tissue

DATE: 28-Aug-1999
 REVISED: 17-Sep-1999
 METHOD NO.: DX-T-03/Ver.2

A So Commune
Grass Carp Fat (duplicate)

SAMPLE SIZE: 3.08 g wet

INSTRUMENT: GC-HRMS

% MOISTURE: 0 % LIPID: 93

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 5.7 | 0.2 | T4CDF - Total | 12 | 0.2 |
| 2,3,7,8 | 3.6 | 0.2 | 2,3,7,8 | 1.9 | 0.2 |
| P5CDD - Total | 1.3 | 0.3 | P5CDF - Total | 5.4 | 0.2 |
| 1,2,3,7,8 | NDR(0.3) | 0.3 | 1,2,3,7,8 | 0.4 | 0.2 |
| | | | 2,3,4,7,8 | ND | 0.2 |
| H6CDD - Total | ND | 0.3 | H6CDF - Total | 0.3 | 0.3 |
| 1,2,3,4,7,8 | ND | 0.3 | 1,2,3,4,7,8 | ND | 0.3 |
| 1,2,3,6,7,8 | ND | 0.3 | 1,2,3,6,7,8 | ND | 0.3 |
| 1,2,3,7,8,9 | ND | 0.3 | 2,3,4,6,7,8 | ND | 0.3 |
| | | | 1,2,3,7,8,9 | ND | 0.3 |
| H7CDD - Total | 0.7 | 0.3 | H7CDF - Total | ND | 0.3 |
| 1,2,3,4,6,7,8 | NDR(0.6) | 0.3 | 1,2,3,4,6,7,8 | ND | 0.3 |
| | | | 1,2,3,4,7,8,9 | ND | 0.3 |
| O8CDD | 3.3 | 0.4 | O8CDF | ND | 0.3 |

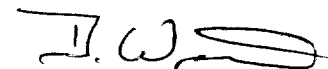
Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 98 |
| 13C-T4CDD | 98 |
| 13C-P5CDF | 100 |
| 13C-P5CDD | 93 |
| 13C-H6CDF | 90 |
| 13C-H6CDD | 90 |
| 13C-H7CDF | 70 |
| 13C-H7CDD | 65 |
| 13C-O8CDD | 58 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 4.0 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 3.8 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP. OF 438/447

AXYS FILE: L1825-36 i

CLIENT: Hatfield Consultants Ltd.
 CLIENT NO.: 2607
 SAMPLE TYPE: Tissue

DATE: 28-Aug-1999
 REVISED: 17-Sep-1999
 METHOD NO.: DX-T-03/Ver.2

**A So Commune
 Grass Carp Fat**

SAMPLE SIZE: 2.78 g wet

INSTRUMENT: GC-HRMS

% MOISTURE: 41

% LIPID: 41

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 25 | 0.3 | T4CDF - Total | 11 | 0.3 |
| 2,3,7,8 | 21 | 0.3 | 2,3,7,8 | 3.4 | 0.3 |
| P5CDD - Total | 4.9 | 0.3 | P5CDF - Total | 0.6 | 0.3 |
| 1,2,3,7,8 | 1.1 | 0.3 | 1,2,3,7,8 | ND | 0.3 |
| | | | 2,3,4,7,8 | NDR(0.4) | 0.3 |
| H6CDD - Total | 0.8 | 0.3 | H6CDF - Total | ND | 0.3 |
| 1,2,3,4,7,8 | ND | 0.3 | 1,2,3,4,7,8 | 0.2 | 0.3 |
| 1,2,3,6,7,8 | ND | 0.3 | 1,2,3,6,7,8 | ND | 0.3 |
| 1,2,3,7,8,9 | ND | 0.3 | 2,3,4,6,7,8 | ND | 0.3 |
| | | | 1,2,3,7,8,9 | ND | 0.3 |
| H7CDD - Total | 1.6 | 0.3 | H7CDF - Total | ND | 0.3 |
| 1,2,3,4,6,7,8 | 0.6 | 0.3 | 1,2,3,4,6,7,8 | ND | 0.3 |
| | | | 1,2,3,4,7,8,9 | ND | 0.3 |
| O8CDD | 6.3 | 0.5 | O8CDF | ND | 0.4 |

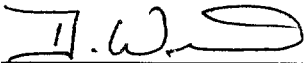
Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 85 |
| 13C-T4CDD | 84 |
| 13C-P5CDF | 95 |
| 13C-P5CDD | 92 |
| 13C-H6CDF | 90 |
| 13C-H6CDD | 88 |
| 13C-H7CDF | 73 |
| 13C-H7CDD | 73 |
| 13C-O8CDD | 79 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|----|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 22 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 22 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

| | | | |
|----------------------------|----------------------------------|--------------------------|----------------------|
| CLIENT SAMPLE I.D.: | COMP. OF 380/386 | AXYS FILE: | L1825-37R |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 03-Nov-1999 |
| CLIENT NO.: | 2607 | REVISED: | 10-Feb-2000 |
| SAMPLE TYPE: | Tissue | METHOD NO.: | DX-T-03/Ver.2 |
| | Hong Van Commune | | |
| | Grass Carp Fat | | |
| SAMPLE SIZE: | 3.25 g wet | INSTRUMENT: | GC-HRMS |
| % MOISTURE: | 12 | % LIPID: | 78 |
| | | CONCENTRATION IN: | pg/g |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 2.0 | 0.1 | T4CDF - Total | 6.5 | 0.3 |
| 2,3,7,8 | NDR(0.3) | 0.1 | 2,3,7,8 | NDR(1.0) | 0.3 |
| P5CDD - Total | ND | 0.1 | P5CDF - Total | ND | 0.5 |
| 1,2,3,7,8 | NDR(0.2) | 0.1 | 1,2,3,7,8 | ND | 0.5 |
| | | | 2,3,4,7,8 | ND | 0.5 |
| H6CDD - Total | ND | 0.1 | H6CDF - Total | ND | 0.4 |
| 1,2,3,4,7,8 | NDR(0.1) | 0.1 | 1,2,3,4,7,8 | ND | 0.4 |
| 1,2,3,6,7,8 | NDR(0.3) | 0.1 | 1,2,3,6,7,8 | ND | 0.4 |
| 1,2,3,7,8,9 | NDR(0.7) | 0.1 | 2,3,4,6,7,8 | ND | 0.4 |
| | | | 1,2,3,7,8,9 | ND | 0.4 |
| H7CDD - Total | 1.7 | 0.2 | H7CDF - Total | ND | 0.6 |
| 1,2,3,4,6,7,8 | 0.7 | 0.2 | 1,2,3,4,6,7,8 | ND | 0.6 |
| | | | 1,2,3,4,7,8,9 | ND | 0.6 |
| O8CDD | NDR(2.6) | 0.3 | O8CDF | ND | 0.4 |


Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 68 |
| 13C-T4CDD | 65 |
| 13C-P5CDF | 63 |
| 13C-P5CDD | 63 |
| 13C-H6CDF | 78 |
| 13C-H6CDD | 78 |
| 13C-H7CDF | 71 |
| 13C-H7CDD | 66 |
| 13C-O8CDD | 58 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.34 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.01 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP. OF 395/391

AXYS FILE: L1825-38

CLIENT: Hatfield Consultants Ltd.
 CLIENT NO.: 2607
 SAMPLE TYPE: Tissue

DATE: 28-Aug-1999
 REVISED: 17-Sep-1999
 METHOD NO.: DX-T-03/Ver.2

Hong Van Commune
Grass Carp Fat

SAMPLE SIZE: 3.03 g wet

INSTRUMENT: GC-HRMS

% MOISTURE: 27

% LIPID: 58

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 6.3 | 0.2 | T4CDF - Total | 4.6 | 0.7 |
| 2,3,7,8 | 3.4 | 0.2 | 2,3,7,8 | 1.0 | 0.7 |
| P5CDD - Total | 0.5 | 0.3 | P5CDF - Total | 1.2 | 0.3 |
| 1,2,3,7,8 | ND | 0.3 | 1,2,3,7,8 | ND | 0.3 |
| | | | 2,3,4,7,8 | ND | 0.3 |
| H6CDD - Total | 0.5 | 0.2 | H6CDF - Total | ND | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | ND | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | ND | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 1.2 | 0.2 | H7CDF - Total | ND | 0.2 |
| 1,2,3,4,6,7,8 | 0.6 | 0.2 | 1,2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD | 4.0 | 0.2 | O8CDF | 0.2 | 0.2 |

Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 110 |
| 13C-T4CDD | 110 |
| 13C-P5CDF | 110 |
| 13C-P5CDD | 99 |
| 13C-H6CDF | 100 |
| 13C-H6CDD | 110 |
| 13C-H7CDF | 93 |
| 13C-H7CDD | 92 |
| 13C-O8CDD | 110 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 3.7 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 3.5 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP. OF 186/199/203

AXYS FILE: L1825-39

CLIENT: Hatfield Consultants Ltd.
 CLIENT NO.: 2607
 SAMPLE TYPE: Tissue

DATE: 28-Aug-1999
 REVISED: 17-Sep-1999
 METHOD NO.: DX-T-03/Ver.2

Huong Lam Commune
Grass Carp Fat

SAMPLE SIZE: 3.10 g wet

INSTRUMENT: GC-HRMS

% MOISTURE: 16

% LIPID: 73

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 1.9 | 0.3 | T4CDF - Total | 9.0 | 0.4 |
| 2,3,7,8 | 0.5 | 0.3 | 2,3,7,8 | 0.6 | 0.4 |
| P5CDD - Total | ND | 0.3 | P5CDF - Total | ND | 0.3 |
| 1,2,3,7,8 | ND | 0.3 | 1,2,3,7,8 | ND | 0.3 |
| | | | 2,3,4,7,8 | ND | 0.3 |
| H6CDD - Total | ND | 0.3 | H6CDF - Total | ND | 0.3 |
| 1,2,3,4,7,8 | ND | 0.3 | 1,2,3,4,7,8 | ND | 0.3 |
| 1,2,3,6,7,8 | ND | 0.3 | 1,2,3,6,7,8 | ND | 0.3 |
| 1,2,3,7,8,9 | ND | 0.3 | 2,3,4,6,7,8 | ND | 0.3 |
| | | | 1,2,3,7,8,9 | ND | 0.3 |
| H7CDD - Total | 1.4 | 0.3 | H7CDF - Total | ND | 0.4 |
| 1,2,3,4,6,7,8 | 0.5 | 0.3 | 1,2,3,4,6,7,8 | ND | 0.4 |
| | | | 1,2,3,4,7,8,9 | ND | 0.4 |
| O8CDD | 4.1 | 0.5 | O8CDF | ND | 0.3 |


Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 85 |
| 13C-T4CDD | 83 |
| 13C-P5CDF | 91 |
| 13C-P5CDD | 87 |
| 13C-H6CDF | 86 |
| 13C-H6CDD | 86 |
| 13C-H7CDF | 69 |
| 13C-H7CDD | 70 |
| 13C-O8CDD | 70 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.81 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.55 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP. OF 135/131

AXYS FILE: L1825-40R

CLIENT: Hatfield Consultants Ltd.

DATE: 03-Nov-1999

CLIENT NO.: 2607

SAMPLE TYPE: Tissue

METHOD NO.: DX-T-03/Ver.2

Hong Thuong Commune
Grass Carp Fat

SAMPLE SIZE: 3.02 g wet

INSTRUMENT: GC-HRMS

% MOISTURE: 13

% LIPID: 78

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 8.5 | 0.6 | T4CDF - Total | 12 | 0.5 |
| 2,3,7,8 | 4.2 | 0.6 | 2,3,7,8 | 2.4 | 0.5 |
| P5CDD - Total | ND | 0.4 | P5CDF - Total | ND | 0.8 |
| 1,2,3,7,8 | ND | 0.4 | 1,2,3,7,8 | ND | 0.8 |
| | | | 2,3,4,7,8 | ND | 0.8 |
| H6CDD - Total | 1.6 | 0.2 | H6CDF - Total | ND | 0.6 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.6 |
| 1,2,3,6,7,8 | NDR(0.3) | 0.2 | 1,2,3,6,7,8 | ND | 0.6 |
| 1,2,3,7,8,9 | ND | 0.2 | 2,3,4,6,7,8 | ND | 0.6 |
| | | | 1,2,3,7,8,9 | ND | 0.6 |
| H7CDD - Total | ND | 0.3 | H7CDF - Total | ND | 0.5 |
| 1,2,3,4,6,7,8 | NDR(1.1) | 0.3 | 1,2,3,4,6,7,8 | ND | 0.5 |
| | | | 1,2,3,4,7,8,9 | ND | 0.5 |
| O8CDD | NDR(3.5) | 0.8 | O8CDF | ND | 1.5 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 73 |
| 13C-T4CDD | 70 |
| 13C-P5CDF | 62 |
| 13C-P5CDD | 63 |
| 13C-H6CDF | 77 |
| 13C-H6CDD | 72 |
| 13C-H7CDF | 58 |
| 13C-H7CDD | 52 |
| 13C-O8CDD | 36 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 4.91 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 4.44 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP. OF 245/250/254

AXYS FILE: L1825-41

CLIENT: Hatfield Consultants Ltd.
CLIENT NO.: 2607
SAMPLE TYPE: Tissue

DATE: 28-Aug-1999
REVISED: 10-Feb-2000
METHOD NO.: DX-T-03/Ver.2

Huong Lam Commune
Indian Carp Liver

SAMPLE SIZE: 5.04 g wet

INSTRUMENT: GC-HRMS

% MOISTURE: 67 % LIPID: 4.7

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.7 | 0.3 | T4CDF - Total | 0.2 | 0.2 |
| 2,3,7,8 | 0.7 | 0.3 | 2,3,7,8 | 0.2 | 0.2 |
| P5CDD - Total | ND | 0.2 | P5CDF - Total | ND | 0.1 |
| 1,2,3,7,8 | ND | 0.2 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | 0.6 | 0.1 | H6CDF - Total | ND | 0.1 |
| 1,2,3,4,7,8 | ND | 0.1 | 1,2,3,4,7,8 | ND | 0.1 |
| 1,2,3,6,7,8 | ND | 0.1 | 1,2,3,6,7,8 | ND | 0.1 |
| 1,2,3,7,8,9 | ND | 0.1 | 2,3,4,6,7,8 | ND | 0.1 |
| | | | 1,2,3,7,8,9 | ND | 0.1 |
| H7CDD - Total | 0.3 | 0.2 | H7CDF - Total | ND | 0.2 |
| 1,2,3,4,6,7,8 | 0.3 | 0.2 | 1,2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD | 2.6 | 0.4 | O8CDF | ND | 0.3 |


Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 89 |
| 13C-T4CDD | 89 |
| 13C-P5CDF | 91 |
| 13C-P5CDD | 94 |
| 13C-H6CDF | 93 |
| 13C-H6CDD | 92 |
| 13C-H7CDF | 74 |
| 13C-H7CDD | 76 |
| 13C-O8CDD | 70 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.89 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.76 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP. OF 272/275/433

AXYS FILE: L1825-42

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Aug-1999

CLIENT NO.: 2607

REVISED: 17-Sep-1999

SAMPLE TYPE: Tissue

A So Commune

METHOD NO.: DX-T-03/Ver.2

SAMPLE SIZE: 10.0 g wet

Rice

INSTRUMENT: GC-HRMS

% MOISTURE: 1

% LIPID: 0.84

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.1 | T4CDF - Total | ND | 0.1 |
| 2,3,7,8 | ND | 0.1 | 2,3,7,8 | ND | 0.1 |
| P5CDD - Total | ND | 0.1 | P5CDF - Total | ND | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | ND | 0.1 | H6CDF - Total | ND | 0.1 |
| 1,2,3,4,7,8 | ND | 0.1 | 1,2,3,4,7,8 | ND | 0.1 |
| 1,2,3,6,7,8 | ND | 0.1 | 1,2,3,6,7,8 | ND | 0.1 |
| 1,2,3,7,8,9 | ND | 0.1 | 2,3,4,6,7,8 | ND | 0.1 |
| | | | 1,2,3,7,8,9 | ND | 0.1 |
| H7CDD - Total | 0.3 | 0.1 | H7CDF - Total | ND | 0.1 |
| 1,2,3,4,6,7,8 | NDR(0.1) | 0.1 | 1,2,3,4,6,7,8 | ND | 0.1 |
| | | | 1,2,3,4,7,8,9 | ND | 0.1 |
| O8CDD | 1.8 | 0.1 | O8CDF | ND | 0.1 |

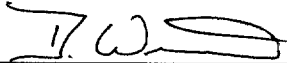
Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 94 |
| 13C-T4CDD | 94 |
| 13C-P5CDF | 96 |
| 13C-P5CDD | 95 |
| 13C-H6CDF | 97 |
| 13C-H6CDD | 99 |
| 13C-H7CDF | 83 |
| 13C-H7CDD | 81 |
| 13C-O8CDD | 92 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.15 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.00 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

| | | | |
|---------------------|---------------------------|---------------------|--------------------|
| CLIENT SAMPLE I.D.: | 99VN-434 | | AXYS FILE: L1991-1 |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 03-Nov-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-T-03/Ver.2 |
| SAMPLE TYPE: | Tissue | A So Commune | |
| | | Chicken egg | |
| SAMPLE SIZE: | 5.37 g wet | INSTRUMENT: | GC-HRMS |
| % MOISTURE: | 68 | % LIPID: | 56 |
| | | CONCENTRATION IN: | pg/g |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.2 | T4CDF - Total | ND | 0.3 |
| 2,3,7,8 | ND | 0.2 | 2,3,7,8 | ND | 0.3 |
| P5CDD - Total | ND | 0.3 | P5CDF - Total | ND | 0.3 |
| 1,2,3,7,8 | ND | 0.3 | 1,2,3,7,8 | ND | 0.3 |
| | | | 2,3,4,7,8 | ND | 0.3 |
| H6CDD - Total | ND | 0.2 | H6CDF - Total | ND | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | ND | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | NDR(0.5) | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | ND | 0.3 | H7CDF - Total | ND | 0.5 |
| 1,2,3,4,6,7,8 | NDR(0.7) | 0.3 | 1,2,3,4,6,7,8 | ND | 0.5 |
| | | | 1,2,3,4,7,8,9 | ND | 0.5 |
| O8CDD | 1.1 | 0.6 | O8CDF | ND | 0.4 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 89 |
| 13C-T4CDD | 89 |
| 13C-P5CDF | 89 |
| 13C-P5CDD | 85 |
| 13C-H6CDF | 94 |
| 13C-H6CDD | 86 |
| 13C-H7CDF | 79 |
| 13C-H7CDD | 74 |
| 13C-O8CDD | 67 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.35 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.00 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN443

AXYS FILE: L2044-5L

CLIENT: Hatfield Consultants Ltd.

DATE: 18-Jan-2000

CLIENT NO.: 2607

SAMPLE TYPE: Tissue

METHOD NO.: DX-T-03/Ver.2

SAMPLE SIZE: 2.55 g (wet)

**A So Commune
 Grass Carp Fat**

INSTRUMENT: GC-HRMS

% MOISTURE: 44

% LIPID: 36

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 25 | 0.24 | T4CDF - Total | 18 | 0.11 |
| 2,3,7,8 | 20 | 0.24 | 2,3,7,8 | 6.0 | 0.11 |
| P5CDD - Total | 5.4 | 0.28 | P5CDF - Total | 5.4 | 0.18 |
| 1,2,3,7,8 | 1.2 | 0.28 | 1,2,3,7,8 | 0.47 | 0.18 |
| | | | 2,3,4,7,8 | 1.4 | 0.18 |
| H6CDD - Total | 0.90 | 0.21 | H6CDF - Total | 0.32 | 0.13 |
| 1,2,3,4,7,8 | 0.32 | 0.21 | 1,2,3,4,7,8 | ND | 0.13 |
| 1,2,3,6,7,8 | 0.33 | 0.21 | 1,2,3,6,7,8 | ND | 0.13 |
| 1,2,3,7,8,9 | 0.25 | 0.21 | 2,3,4,6,7,8 | ND | 0.13 |
| | | | 1,2,3,7,8,9 | ND | 0.13 |
| H7CDD - Total | 0.80 | 0.18 | H7CDF - Total | 0.72 | 0.15 |
| 1,2,3,4,6,7,8 | 0.80 | 0.18 | 1,2,3,4,6,7,8 | 0.42 | 0.15 |
| | | | 1,2,3,4,7,8,9 | ND | 0.15 |
| O8CDD | 2.4 | 0.20 | O8CDF | 1.0 | 0.24 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 80 |
| 13C-T4CDD | 83 |
| 13C-P5CDF | 81 |
| 13C-P5CDD | 80 |
| 13C-H6CDF | 86 |
| 13C-H6CDD | 86 |
| 13C-H7CDF | 72 |
| 13C-H7CDD | 74 |
| 13C-O8CDD | 76 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 21.9 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 21.8 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Diane Luzziale
 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001B

CLIENT SAMPLE I.D.: 99VN163

AXYS FILE: L2044-6

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Dec-1999

CLIENT NO.: 2607

SAMPLE TYPE: Tissue

Huong Lam Commune

METHOD NO.: DX-T-03/Ver.2

SAMPLE SIZE: 2.66 g (wet)

Duck Fat

INSTRUMENT: GC-HRMS

% LIPID: 84

% MOISTURE: 10

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 7.1 | 0.09 | T4CDF - Total | 20 | 0.07 |
| 2,3,7,8 | 5.3 | 0.09 | 2,3,7,8 | 3.2 | 0.07 |
| P5CDD - Total | 1.5 | 0.03 | P5CDF - Total | 8.8 | 0.06 |
| 1,2,3,7,8 | 0.79 | 0.03 | 1,2,3,7,8 | 0.80 | 0.06 |
| | | | 2,3,4,7,8 | 1.5 | 0.06 |
| H6CDD - Total | 1.3 | 0.07 | H6CDF - Total | 0.95 | 0.07 |
| 1,2,3,4,7,8 | 0.39 | 0.07 | 1,2,3,4,7,8 | 0.40 | 0.07 |
| 1,2,3,6,7,8 | 0.56 | 0.07 | 1,2,3,6,7,8 | 0.23 | 0.07 |
| 1,2,3,7,8,9 | NDR(0.37) | 0.07 | 2,3,4,6,7,8 | NDR(0.15) | 0.07 |
| | | | 1,2,3,7,8,9 | ND | 0.07 |
| H7CDD - Total | 0.69 | 0.05 | H7CDF - Total | ND | 0.11 |
| 1,2,3,4,6,7,8 | NDR(0.60) | 0.05 | 1,2,3,4,6,7,8 | NDR(0.15) | 0.11 |
| | | | 1,2,3,4,7,8,9 | ND | 0.11 |
| O8CDD | 2.6 | 0.090 | O8CDF | NDR(0.11) | 0.10 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 87 |
| 13C-T4CDD | 86 |
| 13C-P5CDF | 73 |
| 13C-P5CDD | 80 |
| 13C-H6CDF | 80 |
| 13C-H6CDD | 82 |
| 13C-H7CDF | 66 |
| 13C-H7CDD | 68 |
| 13C-O8CDD | 66 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 7.03 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 7.02 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001B

CLIENT SAMPLE I.D.: 99VN169

AXYS FILE: L2044-7 (A)

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Dec-1999

CLIENT NO.: 2607

SAMPLE TYPE: Tissue

**Huong Lam Commune
 Duck Fat**

METHOD NO.: DX-T-03/Ver.2

SAMPLE SIZE: 3.90 g (wet)

INSTRUMENT: GC-HRMS

% LIPID: 88

% MOISTURE: 0.0

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 6.3 | 0.09 | T4CDF - Total | 16 | 0.08 |
| 2,3,7,8 | 4.5 | 0.09 | 2,3,7,8 | 1.8 | 0.08 |
| P5CDD - Total | 1.8 | 0.03 | P5CDF - Total | 5.3 | 0.04 |
| 1,2,3,7,8 | 0.87 | 0.03 | 1,2,3,7,8 | 0.54 | 0.04 |
| | | | 2,3,4,7,8 | 0.87 | 0.04 |
| H6CDD - Total | 2.4 | 0.07 | H6CDF - Total | 1.3 | 0.05 |
| 1,2,3,4,7,8 | 0.49 | 0.07 | 1,2,3,4,7,8 | 0.42 | 0.05 |
| 1,2,3,6,7,8 | 0.65 | 0.07 | 1,2,3,6,7,8 | 0.24 | 0.05 |
| 1,2,3,7,8,9 | 0.41 | 0.07 | 2,3,4,6,7,8 | 0.21 | 0.05 |
| | | | 1,2,3,7,8,9 | 0.07 | 0.05 |
| H7CDD - Total | 1.4 | 0.04 | H7CDF - Total | ND | 0.05 |
| 1,2,3,4,6,7,8 | 0.81 | 0.04 | 1,2,3,4,6,7,8 | NDR(0.16) | 0.05 |
| | | | 1,2,3,4,7,8,9 | NDR(0.06) | 0.05 |
| O8CDD | 2.1 | 0.07 | O8CDF | 0.10 | 0.06 |


Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 69 |
| 13C-T4CDD | 68 |
| 13C-P5CDF | 73 |
| 13C-P5CDD | 79 |
| 13C-H6CDF | 76 |
| 13C-H6CDD | 79 |
| 13C-H7CDF | 65 |
| 13C-H7CDD | 67 |
| 13C-O8CDD | 69 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 5.83 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 5.83 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001B

| | | | |
|----------------------------|---------------------------|--------------------------|------------------------|
| CLIENT SAMPLE I.D.: | 99VN169 | AXYS FILE: | WG2294-4 (DUP L2044-7) |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 28-Dec-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-T-03/Ver.2 |
| SAMPLE TYPE: | Tissue | INSTRUMENT: | GC-HRMS |
| SAMPLE SIZE: | 3.93 g (wet) | CONCENTRATION IN: | pg/g |
| % LIPID: | 88 | % MOISTURE: | 0.0 |

**Huong Lam Commune
Duck Fat (duplicate)**

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 5.9 | 0.14 | T4CDF - Total | 14 | 0.16 |
| 2,3,7,8 | 4.4 | 0.14 | 2,3,7,8 | 1.9 | 0.16 |
| P5CDD - Total | 2.2 | 0.04 | P5CDF - Total | 4.8 | 0.06 |
| 1,2,3,7,8 | 0.97 | 0.04 | 1,2,3,7,8 | 0.54 | 0.06 |
| | | | 2,3,4,7,8 | 0.95 | 0.06 |
| H6CDD - Total | 2.7 | 0.12 | H6CDF - Total | 0.70 | 0.19 |
| 1,2,3,4,7,8 | 0.47 | 0.12 | 1,2,3,4,7,8 | 0.41 | 0.19 |
| 1,2,3,6,7,8 | 0.69 | 0.12 | 1,2,3,6,7,8 | NDR(0.29) | 0.19 |
| 1,2,3,7,8,9 | 0.56 | 0.12 | 2,3,4,6,7,8 | ND | 0.19 |
| | | | 1,2,3,7,8,9 | ND | 0.19 |
| H7CDD - Total | 1.6 | 0.06 | H7CDF - Total | 0.20 | 0.07 |
| 1,2,3,4,6,7,8 | 0.97 | 0.06 | 1,2,3,4,6,7,8 | 0.20 | 0.07 |
| | | | 1,2,3,4,7,8,9 | ND | 0.07 |
| O8CDD | 2.6 | 0.15 | O8CDF | 0.13 | 0.09 |

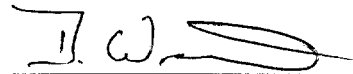
Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 71 |
| 13C-T4CDD | 75 |
| 13C-P5CDF | 78 |
| 13C-P5CDD | 80 |
| 13C-H6CDF | 66 |
| 13C-H6CDD | 74 |
| 13C-H7CDF | 59 |
| 13C-H7CDD | 59 |
| 13C-O8CDD | 53 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 5.86 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 5.83 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.



 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001B

CLIENT SAMPLE I.D.: 99VN325

AXYS FILE: L2044-8

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Dec-1999

CLIENT NO.: 2607

SAMPLE TYPE: Tissue

**A So Commune
Duck Fat**

METHOD NO.: DX-T-03/Ver.2

SAMPLE SIZE: 1.43 g (wet)

INSTRUMENT: GC-HRMS

% LIPID: 63

% MOISTURE: 0.0

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 55 | 0.34 | T4CDF - Total | 15 | 0.21 |
| 2,3,7,8 | 52 | 0.34 | 2,3,7,8 | 5.6 | 0.21 |
| P5CDD - Total | 13 | 0.24 | P5CDF - Total | 3.2 | 0.18 |
| 1,2,3,7,8 | 3.6 | 0.24 | 1,2,3,7,8 | 0.93 | 0.18 |
| | | | 2,3,4,7,8 | 2.3 | 0.18 |
| H6CDD - Total | 0.75 | 0.31 | H6CDF - Total | 0.37 | 0.27 |
| 1,2,3,4,7,8 | 0.75 | 0.31 | 1,2,3,4,7,8 | NDR(0.88) | 0.27 |
| 1,2,3,6,7,8 | NDR(0.90) | 0.31 | 1,2,3,6,7,8 | NDR(0.43) | 0.27 |
| 1,2,3,7,8,9 | ND | 0.31 | 2,3,4,6,7,8 | ND | 0.27 |
| | | | 1,2,3,7,8,9 | ND | 0.27 |
| H7CDD - Total | ND | 0.22 | H7CDF - Total | 0.49 | 0.34 |
| 1,2,3,4,6,7,8 | NDR(0.54) | 0.22 | 1,2,3,4,6,7,8 | 0.49 | 0.34 |
| | | | 1,2,3,4,7,8,9 | ND | 0.34 |
| O8CDD | 2.8 | 1.3 | O8CDF | 1.7 | 0.67 |


Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 54 |
| 13C-T4CDD | 49 |
| 13C-P5CDF | 43 |
| 13C-P5CDD | 44 |
| 13C-H6CDF | 45 |
| 13C-H6CDD | 44 |
| 13C-H7CDF | 25 |
| 13C-H7CDD | 25 |
| 13C-O8CDD | 13 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 56.0 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 55.9 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001A

| | | | |
|----------------------------|----------------------------------|---|----------------------|
| CLIENT SAMPLE I.D.: | COMPOSITE #1 | AXYS FILE: | L2072-4 |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 03-Dec-1999 |
| CLIENT NO.: | 2607 | REVISED: | 07-Feb-2000 |
| SAMPLE TYPE: | Oil | METHOD NO.: | DX-S-01/Ver.2 |
| SAMPLE SIZE: | 1.92 g | Aluoi Commune (#91 Market) Cooking Oil | |
| % MOISTURE: | 5.0 | INSTRUMENT: | GC-HRMS |
| | | CONCENTRATION IN: | pg/g |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | ND | 0.07 | T4CDF - Total | ND | 0.06 |
| 2,3,7,8 | ND | 0.07 | 2,3,7,8 | ND | 0.06 |
| P5CDD - Total | ND | 0.04 | P5CDF - Total | ND | 0.04 |
| 1,2,3,7,8 | NDR(0.1) | 0.04 | 1,2,3,7,8 | ND | 0.04 |
| | | | 2,3,4,7,8 | ND | 0.04 |
| H6CDD - Total | 1.0 | 0.06 | H6CDF - Total | ND | 0.05 |
| 1,2,3,4,7,8 | NDR(0.1) | 0.06 | 1,2,3,4,7,8 | NDR(0.2) | 0.05 |
| 1,2,3,6,7,8 | 0.3 | 0.06 | 1,2,3,6,7,8 | ND | 0.05 |
| 1,2,3,7,8,9 | 0.2 | 0.06 | 2,3,4,6,7,8 | NDR(0.1) | 0.05 |
| | | | 1,2,3,7,8,9 | ND | 0.05 |
| H7CDD - Total | 5.2 | 0.04 | H7CDF - Total | 1.3 | 0.03 |
| 1,2,3,4,6,7,8 | 3.4 | 0.04 | 1,2,3,4,6,7,8 | NDR(0.8) | 0.03 |
| | | | 1,2,3,4,7,8,9 | NDR(0.05) | 0.03 |
| O8CDD | 19 | 0.1 | O8CDF | 2.0 | 0.1 |

Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 78 |
| 13C-T4CDD | 86 |
| 13C-P5CDF | 77 |
| 13C-P5CDD | 79 |
| 13C-H6CDF | 80 |
| 13C-H6CDD | 79 |
| 13C-H7CDF | 68 |
| 13C-H7CDD | 65 |
| 13C-O8CDD | 63 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

2,3,7,8 - TCDD TEQs (ND=1/2 DL) = 0.172 pg/g
 2,3,7,8 - TCDD TEQs (ND=0) = 0.100 pg/g

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved

Section 3

**Dioxin/Furan Analysis Reports:
Human Breast Milk**

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001A

CLIENT SAMPLE I.D.: 99VN629

AXYS FILE: L1936-1 i

CLIENT: Hatfield Consultants

DATE: 17-SEP-1999

CLIENT NO.: 2607

REVISED: 05-Oct-1999

SAMPLE TYPE: Milk

A So Commune

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 26.7 g (wet)

Human Breast Milk (wet weight)

INSTRUMENT: GC-HRMS

Primiparous Female

% LIPID: 5.6

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.31 | 0.01 | T4CDF - Total | ND | 0.01 |
| 2,3,7,8 | 0.31 | 0.01 | 2,3,7,8 | NDR(0.01) | 0.01 |
| P5CDD - Total | ND | 0.01 | P5CDF - Total | 0.04 | 0.01 |
| 1,2,3,7,8 | NDR(0.05) | 0.01 | 1,2,3,7,8 | NDR(0.02) | 0.01 |
| | | | 2,3,4,7,8 | 0.04 | 0.01 |
| H6CDD - Total | 0.08 | 0.01 | H6CDF - Total | 0.06 | 0.01 |
| 1,2,3,4,7,8 | 0.01 | 0.01 | 1,2,3,4,7,8 | NDR(0.09) | 0.01 |
| 1,2,3,6,7,8 | 0.04 | 0.01 | 1,2,3,6,7,8 | 0.05 | 0.01 |
| 1,2,3,7,8,9 | 0.03 | 0.01 | 2,3,4,6,7,8 | NDR(0.02) | 0.01 |
| | | | 1,2,3,7,8,9 | 0.01 | 0.01 |
| H7CDD - Total | 0.01 | 0.01 | H7CDF - Total | 0.13 | 0.01 |
| 1,2,3,4,6,7,8 | NDR(0.06) | 0.01 | 1,2,3,4,6,7,8 | 0.08 | 0.01 |
| | | | 1,2,3,4,7,8,9 | 0.04 | 0.01 |
| O8CDD | 0.13 | 0.01 | O8CDF | NDR(0.02) | 0.01 |

Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 81 |
| 13C-T4CDD | 85 |
| 13C-P5CDF | 78 |
| 13C-P5CDD | 81 |
| 13C-H6CDF | 84 |
| 13C-H6CDD | 84 |
| 13C-H7CDF | 76 |
| 13C-H7CDD | 81 |
| 13C-O8CDD | 100 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.345 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.341 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved



ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN629

AXYS FILE: L1936-1 i

CLIENT: Hatfield Consultants

DATE: 30-SEP-1999

CLIENT NO.: 2607

REVISED: 05-Oct-1999

SAMPLE TYPE: Milk

A So Commune

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 1.50 g lipid

Human Breast Milk (lipid basis)

INSTRUMENT: GC-HRMS

Primiparous Female

% LIPID: 5.6

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 5.5 | 0.2 | T4CDF - Total | ND | 0.2 |
| 2,3,7,8 | 5.5 | 0.2 | 2,3,7,8 | NDR(0.2) | 0.2 |
| P5CDD - Total | ND | 0.2 | P5CDF - Total | 0.7 | 0.2 |
| 1,2,3,7,8 | NDR(0.9) | 0.2 | 1,2,3,7,8 | NDR(0.4) | 0.2 |
| | | | 2,3,4,7,8 | 0.7 | 0.2 |
| H6CDD - Total | 1.3 | 0.2 | H6CDF - Total | 1.1 | 0.2 |
| 1,2,3,4,7,8 | 0.3 | 0.2 | 1,2,3,4,7,8 | NDR(1.6) | 0.2 |
| 1,2,3,6,7,8 | 0.6 | 0.2 | 1,2,3,6,7,8 | 0.9 | 0.2 |
| 1,2,3,7,8,9 | 0.4 | 0.2 | 2,3,4,6,7,8 | NDR(0.4) | 0.2 |
| | | | 1,2,3,7,8,9 | 0.2 | 0.2 |
| H7CDD - Total | 0.2 | 0.2 | H7CDF - Total | 2.3 | 0.2 |
| 1,2,3,4,6,7,8 | NDR(1.1) | 0.2 | 1,2,3,4,6,7,8 | 1.4 | 0.2 |
| | | | 1,2,3,4,7,8,9 | 0.7 | 0.2 |
| O8CDD | 1.8 | 0.2 | O8CDF | NDR(0.4) | 0.2 |

Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 81 |
| 13C-T4CDD | 85 |
| 13C-P5CDF | 78 |
| 13C-P5CDD | 81 |
| 13C-H6CDF | 84 |
| 13C-H6CDD | 84 |
| 13C-H7CDF | 76 |
| 13C-H7CDD | 81 |
| 13C-O8CDD | 100 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 6.15 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 6.08 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved



**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001B

| | | | |
|----------------------------|----------------------------------|---------------------------------------|----------------------|
| CLIENT SAMPLE I.D.: | 99VN648 | AXYS FILE: | L1936-13 i |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 16-MAR-2000 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-M-04/Ver.3 |
| SAMPLE TYPE: | Milk | INSTRUMENT: | GC-HRMS |
| | A So Commune | | |
| SAMPLE SIZE: | 21.5 g (wet) | Human Breast Milk (wet weight) | |
| | | Primiparous Female | |
| % LIPID: | 4.5 | CONCENTRATION IN: | pg/g |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 0.85 | 0.050 | T4CDF - Total | ND | 0.030 |
| 2,3,7,8 | 0.85 | 0.050 | 2,3,7,8 | ND | 0.030 |
| P5CDD - Total | 0.14 | 0.10 | P5CDF - Total | 0.084 | 0.040 |
| 1,2,3,7,8 | 0.14 | 0.10 | 1,2,3,7,8 | ND | 0.040 |
| | | | 2,3,4,7,8 | 0.084 | 0.040 |
| H6CDD - Total | ND | 0.040 | H6CDF - Total | 0.14 | 0.030 |
| 1,2,3,4,7,8 | ND | 0.040 | 1,2,3,4,7,8 | 0.088 | 0.030 |
| 1,2,3,6,7,8 | NDR(0.095) | 0.040 | 1,2,3,6,7,8 | 0.049 | 0.030 |
| 1,2,3,7,8,9 | ND | 0.040 | 2,3,4,6,7,8 | ND | 0.030 |
| | | | 1,2,3,7,8,9 | ND | 0.030 |
| H7CDD - Total | ND | 0.040 | H7CDF - Total | ND | 0.050 |
| 1,2,3,4,6,7,8 | NDR(0.066) | 0.040 | 1,2,3,4,6,7,8 | ND | 0.050 |
| | | | 1,2,3,4,7,8,9 | ND | 0.050 |
| O8CDD | 0.21 | 0.060 | O8CDF | ND | 0.060 |


Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 83 |
| 13C-T4CDD | 86 |
| 13C-P5CDF | 85 |
| 13C-P5CDD | 92 |
| 13C-H6CDF | 81 |
| 13C-H6CDD | 79 |
| 13C-H7CDF | 77 |
| 13C-H7CDD | 74 |
| 13C-O8CDD | 79 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.985 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.972 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001B

| | | | |
|---------------------|--|-------------------|---------------|
| CLIENT SAMPLE I.D.: | 99VN648 | AXYS FILE: | L1936-13 i |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 16-MAR-2000 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-M-04/Ver.3 |
| SAMPLE TYPE: | Milk | | |
| | A So Commune | | |
| SAMPLE SIZE: | 0.968 g lipid | | |
| | Human Breast Milk (lipid basis) | INSTRUMENT: | GC-HRMS |
| | Primiparous Female | | |
| % LIPID: | 4.5 | CONCENTRATION IN: | pg/g |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 19 | 1.1 | T4CDF - Total | ND | 0.67 |
| 2,3,7,8 | 19 | 1.1 | 2,3,7,8 | ND | 0.67 |
| P5CDD - Total | 3.1 | 2.2 | P5CDF - Total | 1.9 | 0.89 |
| 1,2,3,7,8 | 3.1 | 2.2 | 1,2,3,7,8 | ND | 0.89 |
| | | | 2,3,4,7,8 | 1.9 | 0.89 |
| H6CDD - Total | ND | 0.89 | H6CDF - Total | 3.0 | 0.67 |
| 1,2,3,4,7,8 | ND | 0.89 | 1,2,3,4,7,8 | 2.0 | 0.67 |
| 1,2,3,6,7,8 | NDR(2.1) | 0.89 | 1,2,3,6,7,8 | 1.1 | 0.67 |
| 1,2,3,7,8,9 | ND | 0.89 | 2,3,4,6,7,8 | ND | 0.67 |
| | | | 1,2,3,7,8,9 | ND | 0.67 |
| H7CDD - Total | ND | 0.89 | H7CDF - Total | ND | 1.1 |
| 1,2,3,4,6,7,8 | NDR(1.5) | 0.89 | 1,2,3,4,6,7,8 | ND | 1.1 |
| | | | 1,2,3,4,7,8,9 | ND | 1.1 |
| O8CDD | 4.7 | 1.3 | O8CDF | ND | 1.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 83 |
| 13C-T4CDD | 86 |
| 13C-P5CDF | 85 |
| 13C-P5CDD | 92 |
| 13C-H6CDF | 81 |
| 13C-H6CDD | 79 |
| 13C-H7CDF | 77 |
| 13C-H7CDD | 74 |
| 13C-O8CDD | 79 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 21.9 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 21.6 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.



 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001A

CLIENT SAMPLE I.D.: 99VN655

AXYS FILE: L1936-3 I

CLIENT: Hatfield Consultants

DATE: 17-Sep-1999

CLIENT NO.: 2607

REVISED: 05-Oct-1999

SAMPLE TYPE: Milk

A So Commune

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 9.86 g (wet) Human Breast Milk (wet weight)

INSTRUMENT: GC-HRMS

% LIPID: 4.0

Primiparous Female

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.71 | 0.01 | T4CDF - Total | ND | 0.01 |
| 2,3,7,8 | 0.71 | 0.01 | 2,3,7,8 | NDR(0.04) | 0.01 |
| P5CDD - Total | 0.06 | 0.01 | P5CDF - Total | ND | 0.01 |
| 1,2,3,7,8 | 0.06 | 0.01 | 1,2,3,7,8 | NDR(0.02) | 0.01 |
| | | | 2,3,4,7,8 | NDR(0.05) | 0.01 |
| H6CDD - Total | 0.07 | 0.01 | H6CDF - Total | ND | 0.01 |
| 1,2,3,4,7,8 | NDR(0.02) | 0.01 | 1,2,3,4,7,8 | NDR(0.12) | 0.01 |
| 1,2,3,6,7,8 | 0.05 | 0.01 | 1,2,3,6,7,8 | NDR(0.06) | 0.01 |
| 1,2,3,7,8,9 | NDR(0.03) | 0.01 | 2,3,4,6,7,8 | NDR(0.01) | 0.01 |
| | | | 1,2,3,7,8,9 | ND | 0.01 |
| H7CDD - Total | ND | 0.01 | H7CDF - Total | 0.21 | 0.01 |
| 1,2,3,4,6,7,8 | NDR(0.12) | 0.01 | 1,2,3,4,6,7,8 | 0.21 | 0.01 |
| | | | 1,2,3,4,7,8,9 | NDR(0.04) | 0.01 |
| O8CDD | 0.61 | 0.01 | O8CDF | NDR(0.03) | 0.01 |


Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 84 |
| 13C-T4CDD | 87 |
| 13C-P5CDF | 82 |
| 13C-P5CDD | 83 |
| 13C-H6CDF | 92 |
| 13C-H6CDD | 87 |
| 13C-H7CDF | 79 |
| 13C-H7CDD | 80 |
| 13C-O8CDD | 91 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.750 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.744 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001A

CLIENT SAMPLE I.D.: 99VN655

AXYS FILE: L1936-3 i

CLIENT: Hatfield Consultants

DATE: 30-SEP-1999

CLIENT NO.: 2607

REVISED: 06-Oct-1999

SAMPLE TYPE: Milk

A So Commune

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 0.394 g lipid Human Breast Milk (lipid basis)

INSTRUMENT: GC-HRMS

% LIPID: 4.0

Primiparous Female

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 18 | 0.3 | T4CDF - Total | ND | 0.3 |
| 2,3,7,8 | 18 | 0.3 | 2,3,7,8 | NDR(1.0) | 0.3 |
| P5CDD - Total | 1.5 | 0.3 | P5CDF - Total | ND | 0.3 |
| 1,2,3,7,8 | 1.5 | 0.3 | 1,2,3,7,8 | NDR(0.5) | 0.3 |
| | | | 2,3,4,7,8 | NDR(1.3) | 0.3 |
| H6CDD - Total | 1.8 | 0.3 | H6CDF - Total | ND | 0.3 |
| 1,2,3,4,7,8 | NDR(0.5) | 0.3 | 1,2,3,4,7,8 | NDR(2.5) | 0.3 |
| 1,2,3,6,7,8 | 1.4 | 0.3 | 1,2,3,6,7,8 | NDR(1.5) | 0.3 |
| 1,2,3,7,8,9 | NDR(0.8) | 0.3 | 2,3,4,6,7,8 | NDR(0.3) | 0.3 |
| | | | 1,2,3,7,8,9 | ND | 0.3 |
| H7CDD - Total | ND | 0.3 | H7CDF - Total | 5.2 | 0.3 |
| 1,2,3,4,6,7,8 | NDR(3.0) | 0.3 | 1,2,3,4,6,7,8 | 5.2 | 0.3 |
| | | | 1,2,3,4,7,8,9 | NDR(1.0) | 0.3 |
| O8CDD | 15 | 0.3 | O8CDF | NDR(0.8) | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 84 |
| 13C-T4CDD | 87 |
| 13C-P5CDF | 82 |
| 13C-P5CDD | 83 |
| 13C-H6CDF | 92 |
| 13C-H6CDD | 87 |
| 13C-H7CDF | 79 |
| 13C-H7CDD | 80 |
| 13C-O8CDD | 91 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 18.7 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 18.6 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved



ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN649

AXYS FILE: L1936-4 i

CLIENT: Hatfield Consultants

DATE: 17-Sep-1999

CLIENT NO.: 2607

REVISED: 05-Oct-1999

SAMPLE TYPE: Milk

METHOD NO.: DX-M-04/Ver.3

A So Commune

SAMPLE SIZE: 19.5 g (wet)

Human Breast Milk (wet weight)

INSTRUMENT: GC-HRMS

Primiparous Female

% LIPID: 3.3

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.54 | 0.01 | T4CDF - Total | ND | 0.01 |
| 2,3,7,8 | 0.54 | 0.01 | 2,3,7,8 | ND | 0.01 |
| P5CDD - Total | 0.06 | 0.01 | P5CDF - Total | ND | 0.01 |
| 1,2,3,7,8 | 0.06 | 0.01 | 1,2,3,7,8 | NDR(0.03) | 0.01 |
| | | | 2,3,4,7,8 | NDR(0.09) | 0.01 |
| H6CDD - Total | 0.10 | 0.01 | H6CDF - Total | 0.35 | 0.01 |
| 1,2,3,4,7,8 | NDR(0.02) | 0.01 | 1,2,3,4,7,8 | 0.23 | 0.01 |
| 1,2,3,6,7,8 | 0.10 | 0.01 | 1,2,3,6,7,8 | 0.12 | 0.01 |
| 1,2,3,7,8,9 | NDR(0.03) | 0.01 | 2,3,4,6,7,8 | NDR(0.02) | 0.01 |
| | | | 1,2,3,7,8,9 | NDR(0.01) | 0.01 |
| H7CDD - Total | 0.02 | 0.01 | H7CDF - Total | 0.17 | 0.01 |
| 1,2,3,4,6,7,8 | NDR(0.08) | 0.01 | 1,2,3,4,6,7,8 | 0.14 | 0.01 |
| | | | 1,2,3,4,7,8,9 | 0.02 | 0.01 |
| O8CDD | 0.26 | 0.01 | O8CDF | NDR(0.02) | 0.01 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 88 |
| 13C-T4CDD | 91 |
| 13C-P5CDF | 85 |
| 13C-P5CDD | 88 |
| 13C-H6CDF | 91 |
| 13C-H6CDD | 88 |
| 13C-H7CDF | 88 |
| 13C-H7CDD | 85 |
| 13C-O8CDD | 99 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.619 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.614 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved _____



ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

| | | | |
|----------------------------|-----------------------------|--|----------------------------|
| CLIENT SAMPLE I.D.: | 99VN649 | AXYS FILE: | L1936-4 i |
| CLIENT: | Hatfield Consultants | DATE: | 30-SEP-1999 |
| CLIENT NO.: | 2607 | REVISED: | 06-Oct-1999 |
| SAMPLE TYPE: | Milk | METHOD NO.: | DX-M-04/Ver.3 |
| | A So Commune | | |
| SAMPLE SIZE: | 0.644 g lipid | Human Breast Milk (lipid basis) | INSTRUMENT: GC-HRMS |
| | | Primiparous Female | |
| % LIPID: | 3.3 | CONCENTRATION IN: | pg/g |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 16 | 0.3 | T4CDF - Total | ND | 0.3 |
| 2,3,7,8 | 16 | 0.3 | 2,3,7,8 | ND | 0.3 |
| P5CDD - Total | 1.8 | 0.3 | P5CDF - Total | ND | 0.3 |
| 1,2,3,7,8 | 1.8 | 0.3 | 1,2,3,7,8 | NDR(0.9) | 0.3 |
| | | | 2,3,4,7,8 | NDR(2.7) | 0.3 |
| H6CDD - Total | 3.0 | 0.3 | H6CDF - Total | 11 | 0.3 |
| 1,2,3,4,7,8 | NDR(0.7) | 0.3 | 1,2,3,4,7,8 | 6.8 | 0.3 |
| 1,2,3,6,7,8 | 3.0 | 0.3 | 1,2,3,6,7,8 | 3.7 | 0.3 |
| 1,2,3,7,8,9 | NDR(1.0) | 0.3 | 2,3,4,6,7,8 | NDR(0.6) | 0.3 |
| | | | 1,2,3,7,8,9 | NDR(0.3) | 0.3 |
| H7CDD - Total | 0.6 | 0.3 | H7CDF - Total | 5.0 | 0.3 |
| 1,2,3,4,6,7,8 | NDR(2.4) | 0.3 | 1,2,3,4,6,7,8 | 4.3 | 0.3 |
| | | | 1,2,3,4,7,8,9 | 0.7 | 0.3 |
| O8CDD | 7.9 | 0.3 | O8CDF | NDR(0.6) | 0.3 |

Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 88 |
| 13C-T4CDD | 91 |
| 13C-P5CDF | 85 |
| 13C-P5CDD | 88 |
| 13C-H6CDF | 91 |
| 13C-H6CDD | 88 |
| 13C-H7CDF | 88 |
| 13C-H7CDD | 85 |
| 13C-O8CDD | 99 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 18.8 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 18.6 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.



Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

| | | | |
|---------------------|--------------------------------|-------------------|---------------|
| CLIENT SAMPLE I.D.: | 99VN603 | AXYS FILE: | L1936-5 i |
| CLIENT: | Hatfield Consultants | DATE: | 17-Sep-1999 |
| CLIENT NO.: | 2607 | REVISED: | 05-Oct-1999 |
| SAMPLE TYPE: | Milk | METHOD NO.: | DX-M-04/Ver.3 |
| | Huong Lam Commune | | |
| SAMPLE SIZE: | 20.6 g (wet) | INSTRUMENT: | GC-HRMS |
| | Human Breast Milk (wet weight) | | |
| | Primiparous Female | | |
| % LIPID: | 3.6 | CONCENTRATION IN: | pg/g |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.11 | 0.01 | T4CDF - Total | 0.04 | 0.01 |
| 2,3,7,8 | 0.11 | 0.01 | 2,3,7,8 | 0.04 | 0.01 |
| P5CDD - Total | 0.10 | 0.01 | P5CDF - Total | 0.30 | 0.01 |
| 1,2,3,7,8 | 0.10 | 0.01 | 1,2,3,7,8 | 0.07 | 0.01 |
| | | | 2,3,4,7,8 | 0.21 | 0.01 |
| H6CDD - Total | 0.28 | 0.01 | H6CDF - Total | 0.82 | 0.01 |
| 1,2,3,4,7,8 | 0.04 | 0.01 | 1,2,3,4,7,8 | 0.49 | 0.01 |
| 1,2,3,6,7,8 | 0.18 | 0.01 | 1,2,3,6,7,8 | 0.25 | 0.01 |
| 1,2,3,7,8,9 | 0.06 | 0.01 | 2,3,4,6,7,8 | 0.05 | 0.01 |
| | | | 1,2,3,7,8,9 | NDR(0.02) | 0.01 |
| H7CDD - Total | 0.33 | 0.01 | H7CDF - Total | 0.67 | 0.01 |
| 1,2,3,4,6,7,8 | 0.33 | 0.01 | 1,2,3,4,6,7,8 | 0.52 | 0.01 |
| | | | 1,2,3,4,7,8,9 | 0.12 | 0.01 |
| O8CDD | 0.54 | 0.01 | O8CDF | 0.18 | 0.01 |


Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 94 |
| 13C-T4CDD | 98 |
| 13C-P5CDF | 91 |
| 13C-P5CDD | 92 |
| 13C-H6CDF | 97 |
| 13C-H6CDD | 96 |
| 13C-H7CDF | 97 |
| 13C-H7CDD | 91 |
| 13C-O8CDD | 110 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.381 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.381 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.



 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN603

AXYS FILE: L1936-5 i

CLIENT: Hatfield Consultants
 CLIENT NO.: 2607
 SAMPLE TYPE: Milk

DATE: 30-SEP-1999
 REVISED: 05-Oct-1999
 METHOD NO.: DX-M-04/Ver.3

Huong Lam Commune
 Human Breast Milk (lipid basis)
 Primiparous Female

SAMPLE SIZE: 0.742 g lipid
 % LIPID: 3.6

INSTRUMENT: GC-HRMS
 CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 2.9 | 0.3 | T4CDF - Total | 1.1 | 0.3 |
| 2,3,7,8 | 2.9 | 0.3 | 2,3,7,8 | 1.1 | 0.3 |
| P5CDD - Total | 2.7 | 0.3 | P5CDF - Total | 8.3 | 0.3 |
| 1,2,3,7,8 | 2.7 | 0.3 | 1,2,3,7,8 | 2.1 | 0.3 |
| | | | 2,3,4,7,8 | 5.7 | 0.3 |
| H6CDD - Total | 7.7 | 0.3 | H6CDF - Total | 23 | 0.3 |
| 1,2,3,4,7,8 | 1.1 | 0.3 | 1,2,3,4,7,8 | 14 | 0.3 |
| 1,2,3,6,7,8 | 5.0 | 0.3 | 1,2,3,6,7,8 | 7.0 | 0.3 |
| 1,2,3,7,8,9 | 1.6 | 0.3 | 2,3,4,6,7,8 | 1.3 | 0.3 |
| | | | 1,2,3,7,8,9 | NDR(0.6) | 0.3 |
| H7CDD - Total | 9.2 | 0.3 | H7CDF - Total | 17 | 0.3 |
| 1,2,3,4,6,7,8 | 9.2 | 0.3 | 1,2,3,4,6,7,8 | 14 | 0.3 |
| | | | 1,2,3,4,7,8,9 | 3.2 | 0.3 |
| O8CDD | 15 | 0.3 | O8CDF | 4.9 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 94 |
| 13C-T4CDD | 98 |
| 13C-P5CDF | 91 |
| 13C-P5CDD | 92 |
| 13C-H6CDF | 97 |
| 13C-H6CDD | 96 |
| 13C-H7CDF | 97 |
| 13C-H7CDD | 91 |
| 13C-O8CDD | 110 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 10.6 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 10.6 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001A

CLIENT SAMPLE I.D.: 99VN608

AXYS FILE: L1936-6 i

CLIENT: Hatfield Consultants

DATE: 17-Sep-1999

CLIENT NO.: 2607

REVISED: 05-Oct-1999

SAMPLE TYPE: Milk

Huong Lam Commune

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 48.6 g (wet) Human Breast Milk (wet weight)

INSTRUMENT: GC-HRMS

% LIPID: 1.7

Primiparous Female

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.10 | 0.01 | T4CDF - Total | ND | 0.01 |
| 2,3,7,8 | 0.10 | 0.01 | 2,3,7,8 | NDR(0.01) | 0.01 |
| P5CDD - Total | 0.03 | 0.01 | P5CDF - Total | 0.06 | 0.01 |
| 1,2,3,7,8 | 0.03 | 0.01 | 1,2,3,7,8 | 0.01 | 0.01 |
| | | | 2,3,4,7,8 | 0.05 | 0.01 |
| H6CDD - Total | 0.10 | 0.01 | H6CDF - Total | 0.11 | 0.01 |
| 1,2,3,4,7,8 | 0.02 | 0.01 | 1,2,3,4,7,8 | 0.11 | 0.01 |
| 1,2,3,6,7,8 | 0.06 | 0.01 | 1,2,3,6,7,8 | NDR(0.06) | 0.01 |
| 1,2,3,7,8,9 | 0.02 | 0.01 | 2,3,4,6,7,8 | NDR(0.01) | 0.01 |
| | | | 1,2,3,7,8,9 | ND | 0.01 |
| H7CDD - Total | 0.08 | 0.01 | H7CDF - Total | 0.11 | 0.01 |
| 1,2,3,4,6,7,8 | 0.08 | 0.01 | 1,2,3,4,6,7,8 | 0.09 | 0.01 |
| | | | 1,2,3,4,7,8,9 | 0.02 | 0.01 |
| O8CDD | 0.22 | 0.01 | O8CDF | ND | 0.01 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 81 |
| 13C-T4CDD | 84 |
| 13C-P5CDF | 80 |
| 13C-P5CDD | 81 |
| 13C-H6CDF | 83 |
| 13C-H6CDD | 82 |
| 13C-H7CDF | 79 |
| 13C-H7CDD | 77 |
| 13C-O8CDD | 83 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.159 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.157 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved



ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN608

AXYS FILE: L1936-6 i

CLIENT: Hatfield Consultants

DATE: 30-SEP-1999

CLIENT NO.: 2607

REVISED: 05-Oct-1999

SAMPLE TYPE: Milk

Huong Lam Commune

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 0.826 g lipid Human Breast Milk (lipid basis)

INSTRUMENT: GC-HRMS

% LIPID: 1.7

Primiparous Female

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 5.8 | 0.6 | T4CDF - Total | ND | 0.6 |
| 2,3,7,8 | 5.8 | 0.6 | 2,3,7,8 | NDR(0.6) | 0.6 |
| P5CDD - Total | 1.5 | 0.6 | P5CDF - Total | 3.2 | 0.6 |
| 1,2,3,7,8 | 1.5 | 0.6 | 1,2,3,7,8 | 0.6 | 0.6 |
| | | | 2,3,4,7,8 | 2.6 | 0.6 |
| H6CDD - Total | 5.8 | 0.6 | H6CDF - Total | 6.3 | 0.6 |
| 1,2,3,4,7,8 | 1.1 | 0.6 | 1,2,3,4,7,8 | 6.3 | 0.6 |
| 1,2,3,6,7,8 | 3.3 | 0.6 | 1,2,3,6,7,8 | NDR(3.5) | 0.6 |
| 1,2,3,7,8,9 | 1.4 | 0.6 | 2,3,4,6,7,8 | NDR(0.6) | 0.6 |
| | | | 1,2,3,7,8,9 | ND | 0.6 |
| H7CDD - Total | 4.5 | 0.6 | H7CDF - Total | 6.0 | 0.6 |
| 1,2,3,4,6,7,8 | 4.5 | 0.6 | 1,2,3,4,6,7,8 | 5.1 | 0.6 |
| | | | 1,2,3,4,7,8,9 | 0.9 | 0.6 |
| O8CDD | 13 | 0.6 | O8CDF | ND | 0.6 |


Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 81 |
| 13C-T4CDD | 84 |
| 13C-P5CDF | 80 |
| 13C-P5CDD | 81 |
| 13C-H6CDF | 83 |
| 13C-H6CDD | 82 |
| 13C-H7CDF | 79 |
| 13C-H7CDD | 77 |
| 13C-O8CDD | 83 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 9.33 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 9.22 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN609

AXYS FILE: L1936-7

CLIENT: Hatfield Consultants Ltd.

DATE: 14-Sept-1999

CLIENT NO.: 2607

REVISED: 05-Oct-1999

SAMPLE TYPE: Milk

METHOD NO.: DX-M-04/Ver.3

Huong Lam Commune

SAMPLE SIZE: 25.1 g wet

Human Breast Milk (wet weight)

INSTRUMENT: GC-HRMS

% LIPID: 1.3

Primiparous Female

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.15 | 0.01 | T4CDF - Total | ND | 0.01 |
| 2,3,7,8 | 0.15 | 0.01 | 2,3,7,8 | ND | 0.01 |
| P5CDD - Total | ND | 0.01 | P5CDF - Total | 0.04 | 0.01 |
| 1,2,3,7,8 | NDR(0.02) | 0.01 | 1,2,3,7,8 | NDR(0.01) | 0.01 |
| | | | 2,3,4,7,8 | 0.04 | 0.01 |
| H6CDD - Total | ND | 0.01 | H6CDF - Total | 0.09 | 0.01 |
| 1,2,3,4,7,8 | NDR(0.02) | 0.01 | 1,2,3,4,7,8 | 0.09 | 0.01 |
| 1,2,3,6,7,8 | NDR(0.05) | 0.01 | 1,2,3,6,7,8 | NDR(0.05) | 0.01 |
| 1,2,3,7,8,9 | NDR(0.02) | 0.01 | 2,3,4,6,7,8 | ND | 0.01 |
| | | | 1,2,3,7,8,9 | ND | 0.01 |
| H7CDD - Total | 0.02 | 0.01 | H7CDF - Total | 0.07 | 0.01 |
| 1,2,3,4,6,7,8 | NDR(0.06) | 0.01 | 1,2,3,4,6,7,8 | 0.07 | 0.01 |
| | | | 1,2,3,4,7,8,9 | NDR(0.02) | 0.01 |
| O8CDD | 0.21 | 0.01 | O8CDF | NDR(0.02) | 0.01 |


Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 90 |
| 13C-T4CDD | 92 |
| 13C-P5CDF | 93 |
| 13C-P5CDD | 100 |
| 13C-H6CDF | 97 |
| 13C-H6CDD | 97 |
| 13C-H7CDF | 95 |
| 13C-H7CDD | 98 |
| 13C-O8CDD | 120 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.189 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.183 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN609

AXYS FILE: L1936-7

CLIENT: Hatfield Consultants Ltd.
 CLIENT NO.: 2607
 SAMPLE TYPE: Milk

DATE: 30-Sept-1999
 REVISED: 06-Oct-1999
 METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 0.326 g lipid

Huong Lam Commune
 Human Breast Milk (lipid basis)

INSTRUMENT: GC-HRMS

% LIPID: 1.3

Primiparous Female

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 12 | 0.8 | T4CDF - Total | ND | 0.8 |
| 2,3,7,8 | 12 | 0.8 | 2,3,7,8 | ND | 0.8 |
| P5CDD - Total | ND | 0.8 | P5CDF - Total | 3.1 | 0.8 |
| 1,2,3,7,8 | NDR(1.5) | 0.8 | 1,2,3,7,8 | NDR(0.8) | 0.8 |
| | | | 2,3,4,7,8 | 3.1 | 0.8 |
| H6CDD - Total | ND | 0.8 | H6CDF - Total | 6.9 | 0.8 |
| 1,2,3,4,7,8 | NDR(1.5) | 0.8 | 1,2,3,4,7,8 | 6.9 | 0.8 |
| 1,2,3,6,7,8 | NDR(3.8) | 0.8 | 1,2,3,6,7,8 | NDR(3.8) | 0.8 |
| 1,2,3,7,8,9 | NDR(1.5) | 0.8 | 2,3,4,6,7,8 | ND | 0.8 |
| | | | 1,2,3,7,8,9 | ND | 0.8 |
| H7CDD - Total | 1.8 | 0.8 | H7CDF - Total | 5.5 | 0.8 |
| 1,2,3,4,6,7,8 | NDR(4.6) | 0.8 | 1,2,3,4,6,7,8 | 5.5 | 0.8 |
| | | | 1,2,3,4,7,8,9 | NDR(1.5) | 0.8 |
| O8CDD | 16 | 0.8 | O8CDF | NDR(1.5) | 0.8 |

Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 90 |
| 13C-T4CDD | 92 |
| 13C-P5CDF | 93 |
| 13C-P5CDD | 100 |
| 13C-H6CDF | 97 |
| 13C-H6CDD | 97 |
| 13C-H7CDF | 95 |
| 13C-H7CDD | 98 |
| 13C-O8CDD | 120 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 14.6 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 14.1 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN625

AXYS FILE: L1936-8

CLIENT: Hatfield Consultants Ltd.

DATE: 14-Sept-1999

CLIENT NO.: 2607

REVISED: 05-Oct-1999

SAMPLE TYPE: Milk

METHOD NO.: DX-M-04/Ver.3

Huong Lam Commune

SAMPLE SIZE: 18.0 g wet

Human Breast Milk (wet weight)

INSTRUMENT: GC-HRMS

Primiparous Female

% LIPID: 3.7

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.31 | 0.01 | T4CDF - Total | ND | 0.01 |
| 2,3,7,8 | 0.31 | 0.01 | 2,3,7,8 | NDR(0.01) | 0.01 |
| P5CDD - Total | ND | 0.01 | P5CDF - Total | 0.07 | 0.01 |
| 1,2,3,7,8 | NDR(0.07) | 0.01 | 1,2,3,7,8 | ND | 0.01 |
| | | | 2,3,4,7,8 | 0.07 | 0.01 |
| H6CDD - Total | ND | 0.01 | H6CDF - Total | 0.20 | 0.01 |
| 1,2,3,4,7,8 | NDR(0.04) | 0.01 | 1,2,3,4,7,8 | 0.13 | 0.01 |
| 1,2,3,6,7,8 | NDR(0.12) | 0.01 | 1,2,3,6,7,8 | 0.07 | 0.01 |
| 1,2,3,7,8,9 | NDR(0.04) | 0.01 | 2,3,4,6,7,8 | NDR(0.02) | 0.01 |
| | | | 1,2,3,7,8,9 | ND | 0.01 |
| H7CDD - Total | 0.33 | 0.01 | H7CDF - Total | 0.14 | 0.01 |
| 1,2,3,4,6,7,8 | 0.33 | 0.01 | 1,2,3,4,6,7,8 | 0.14 | 0.01 |
| | | | 1,2,3,4,7,8,9 | NDR(0.02) | 0.01 |
| O8CDD | 1.9 | 0.01 | O8CDF | NDR(0.02) | 0.01 |


Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 84 |
| 13C-T4CDD | 87 |
| 13C-P5CDF | 87 |
| 13C-P5CDD | 94 |
| 13C-H6CDF | 92 |
| 13C-H6CDD | 93 |
| 13C-H7CDF | 86 |
| 13C-H7CDD | 88 |
| 13C-O8CDD | 89 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.376 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.370 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001A

CLIENT SAMPLE I.D.: 99VN625

AXYS FILE: L1936-8

CLIENT: Hatfield Consultants Ltd.

DATE: 30-Sept-1999

CLIENT NO.: 2607

REVISED: 06-Oct-1999

SAMPLE TYPE: Milk

METHOD NO.: DX-M-04/Ver.3

Huong Lam Commune

SAMPLE SIZE: 0.666 g lipid

Human Breast Milk (lipid basis)

INSTRUMENT: GC-HRMS

% LIPID: 3.7

Primiparous Female

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 8.3 | 0.3 | T4CDF - Total | ND | 0.3 |
| 2,3,7,8 | 8.3 | 0.3 | 2,3,7,8 | NDR(0.3) | 0.3 |
| P5CDD - Total | ND | 0.3 | P5CDF - Total | 1.9 | 0.3 |
| 1,2,3,7,8 | NDR(1.9) | 0.3 | 1,2,3,7,8 | ND | 0.3 |
| | | | 2,3,4,7,8 | 1.9 | 0.3 |
| H6CDD - Total | ND | 0.3 | H6CDF - Total | 5.4 | 0.3 |
| 1,2,3,4,7,8 | NDR(1.1) | 0.3 | 1,2,3,4,7,8 | 3.5 | 0.3 |
| 1,2,3,6,7,8 | NDR(2.7) | 0.3 | 1,2,3,6,7,8 | 1.9 | 0.3 |
| 1,2,3,7,8,9 | NDR(1.1) | 0.3 | 2,3,4,6,7,8 | NDR(0.5) | 0.3 |
| | | | 1,2,3,7,8,9 | ND | 0.3 |
| H7CDD - Total | 8.9 | 0.3 | H7CDF - Total | 3.8 | 0.3 |
| 1,2,3,4,6,7,8 | 8.9 | 0.3 | 1,2,3,4,6,7,8 | 3.8 | 0.3 |
| | | | 1,2,3,4,7,8,9 | NDR(0.5) | 0.3 |
| O8CDD | 51 | 0.3 | O8CDF | NDR(0.5) | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 84 |
| 13C-T4CDD | 87 |
| 13C-P5CDF | 87 |
| 13C-P5CDD | 94 |
| 13C-H6CDF | 92 |
| 13C-H6CDD | 93 |
| 13C-H7CDF | 86 |
| 13C-H7CDD | 88 |
| 13C-O8CDD | 89 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 10.2 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 9.99 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN666

AXYS FILE: L1936-9

CLIENT: Hatfield Consultants Ltd.

DATE: 14-Sept-1999

CLIENT NO.: 2607

REVISED: 05-Oct-1999

SAMPLE TYPE: Milk

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 33.2 g wet

Hong Van Commune
Human Breast Milk (wet weight)

INSTRUMENT: GC-HRMS

% LIPID: 2.7

Primiparous Female

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 0.09 | 0.01 | T4CDF - Total | ND | 0.01 |
| 2,3,7,8 | 0.09 | 0.01 | 2,3,7,8 | NDR(0.01) | 0.01 |
| P5CDD - Total | ND | 0.01 | P5CDF - Total | 0.05 | 0.01 |
| 1,2,3,7,8 | NDR(0.03) | 0.01 | 1,2,3,7,8 | NDR(0.01) | 0.01 |
| | | | 2,3,4,7,8 | 0.05 | 0.01 |
| H6CDD - Total | 0.05 | 0.01 | H6CDF - Total | 0.14 | 0.01 |
| 1,2,3,4,7,8 | NDR(0.02) | 0.01 | 1,2,3,4,7,8 | 0.09 | 0.01 |
| 1,2,3,6,7,8 | 0.05 | 0.01 | 1,2,3,6,7,8 | 0.05 | 0.01 |
| 1,2,3,7,8,9 | NDR(0.03) | 0.01 | 2,3,4,6,7,8 | NDR(0.01) | 0.01 |
| | | | 1,2,3,7,8,9 | ND | 0.01 |
| H7CDD - Total | 0.08 | 0.01 | H7CDF - Total | 0.07 | 0.01 |
| 1,2,3,4,6,7,8 | 0.08 | 0.01 | 1,2,3,4,6,7,8 | 0.07 | 0.01 |
| | | | 1,2,3,4,7,8,9 | ND | 0.01 |
| O8CDD | 0.34 | 0.01 | O8CDF | NDR(0.01) | 0.01 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 63 |
| 13C-T4CDD | 67 |
| 13C-P5CDF | 68 |
| 13C-P5CDD | 78 |
| 13C-H6CDF | 75 |
| 13C-H6CDD | 74 |
| 13C-H7CDF | 70 |
| 13C-H7CDD | 70 |
| 13C-O8CDD | 80 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.137 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.131 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved



ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN666

AXYS FILE: L1936-9

CLIENT: Hatfield Consultants Ltd.

DATE: 30-Sept-1999

CLIENT NO.: 2607

REVISED: 06-Oct-1999

SAMPLE TYPE: Milk

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 0.896 g lipid

Hong Van Commune
 Human Breast Milk (lipid basis)

INSTRUMENT: GC-HRMS

% LIPID: 2.7

Primiparous Female

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 3.3 | 0.4 | T4CDF - Total | ND | 0.4 |
| 2,3,7,8 | 3.3 | 0.4 | 2,3,7,8 | NDR(0.4) | 0.4 |
| P5CDD - Total | ND | 0.4 | P5CDF - Total | 1.8 | 0.4 |
| 1,2,3,7,8 | NDR(1.1) | 0.4 | 1,2,3,7,8 | NDR(0.4) | 0.4 |
| | | | 2,3,4,7,8 | 1.8 | 0.4 |
| H6CDD - Total | 1.8 | 0.4 | H6CDF - Total | 4.8 | 0.4 |
| 1,2,3,4,7,8 | NDR(0.7) | 0.4 | 1,2,3,4,7,8 | 3.1 | 0.4 |
| 1,2,3,6,7,8 | 1.8 | 0.4 | 1,2,3,6,7,8 | 1.7 | 0.4 |
| 1,2,3,7,8,9 | NDR(1.1) | 0.4 | 2,3,4,6,7,8 | NDR(0.4) | 0.4 |
| | | | 1,2,3,7,8,9 | ND | 0.4 |
| H7CDD - Total | 3.0 | 0.4 | H7CDF - Total | 2.4 | 0.4 |
| 1,2,3,4,6,7,8 | 3.0 | 0.4 | 1,2,3,4,6,7,8 | 2.4 | 0.4 |
| | | | 1,2,3,4,7,8,9 | ND | 0.4 |
| O8CDD | 13 | 0.4 | O8CDF | NDR(0.4) | 0.4 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 63 |
| 13C-T4CDD | 67 |
| 13C-P5CDF | 68 |
| 13C-P5CDD | 78 |
| 13C-H6CDF | 75 |
| 13C-H6CDD | 74 |
| 13C-H7CDF | 70 |
| 13C-H7CDD | 70 |
| 13C-O8CDD | 80 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 5.07 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 4.87 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved



ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN667

AXYS FILE: L1936-10

CLIENT: Hatfield Consultants Ltd.
 CLIENT NO.: 2607
 SAMPLE TYPE: Milk

DATE: 14-Sept-1999
 REVISED: 05-Oct-1999
 METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 29.8 g wet
 % LIPID: 2.1
 Hong Van Commune
 Human Breast Milk (wet weight)
 Primiparous Female

INSTRUMENT: GC-HRMS
 CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.05 | 0.01 | T4CDF - Total | ND | 0.01 |
| 2,3,7,8 | 0.05 | 0.01 | 2,3,7,8 | ND | 0.01 |
| P5CDD - Total | 0.03 | 0.01 | P5CDF - Total | ND | 0.01 |
| 1,2,3,7,8 | 0.03 | 0.01 | 1,2,3,7,8 | ND | 0.01 |
| | | | 2,3,4,7,8 | NDR(0.03) | 0.01 |
| H6CDD - Total | 0.07 | 0.01 | H6CDF - Total | 0.10 | 0.01 |
| 1,2,3,4,7,8 | NDR(0.01) | 0.01 | 1,2,3,4,7,8 | 0.06 | 0.01 |
| 1,2,3,6,7,8 | 0.05 | 0.01 | 1,2,3,6,7,8 | 0.04 | 0.01 |
| 1,2,3,7,8,9 | 0.02 | 0.01 | 2,3,4,6,7,8 | NDR(0.01) | 0.01 |
| | | | 1,2,3,7,8,9 | ND | 0.01 |
| H7CDD - Total | 0.01 | 0.01 | H7CDF - Total | 0.07 | 0.01 |
| 1,2,3,4,6,7,8 | NDR(0.05) | 0.01 | 1,2,3,4,6,7,8 | 0.06 | 0.01 |
| | | | 1,2,3,4,7,8,9 | NDR(0.01) | 0.01 |
| O8CDD | 0.25 | 0.01 | O8CDF | NDR(0.01) | 0.01 |


Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 82 |
| 13C-T4CDD | 85 |
| 13C-P5CDF | 91 |
| 13C-P5CDD | 100 |
| 13C-H6CDF | 92 |
| 13C-H6CDD | 99 |
| 13C-H7CDF | 92 |
| 13C-H7CDD | 88 |
| 13C-O8CDD | 82 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.081 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.076 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN667

AXYS FILE: L1936-10

CLIENT: Hatfield Consultants Ltd.
 CLIENT NO.: 2607
 SAMPLE TYPE: Milk

DATE: 30-Sept-1999
 REVISED: 06-Oct-1999
 METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 0.626 g lipid
 % LIPID: 2.1

Hong Van Commune
Human Breast Milk (lipid basis)
Primiparous Female

INSTRUMENT: GC-HRMS
 CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 2.2 | 0.5 | T4CDF - Total | ND | 0.5 |
| 2,3,7,8 | 2.2 | 0.5 | 2,3,7,8 | ND | 0.5 |
| P5CDD - Total | 1.2 | 0.5 | P5CDF - Total | ND | 0.5 |
| 1,2,3,7,8 | 1.2 | 0.5 | 1,2,3,7,8 | ND | 0.5 |
| | | | 2,3,4,7,8 | NDR(1.4) | 0.5 |
| H6CDD - Total | 3.0 | 0.5 | H6CDF - Total | 4.7 | 0.5 |
| 1,2,3,4,7,8 | NDR(0.5) | 0.5 | 1,2,3,4,7,8 | 3.0 | 0.5 |
| 1,2,3,6,7,8 | 2.2 | 0.5 | 1,2,3,6,7,8 | 1.7 | 0.5 |
| 1,2,3,7,8,9 | 0.8 | 0.5 | 2,3,4,6,7,8 | NDR(0.5) | 0.5 |
| | | | 1,2,3,7,8,9 | ND | 0.5 |
| H7CDD - Total | 0.5 | 0.5 | H7CDF - Total | 3.4 | 0.5 |
| 1,2,3,4,6,7,8 | NDR(2.4) | 0.5 | 1,2,3,4,6,7,8 | 2.9 | 0.5 |
| | | | 1,2,3,4,7,8,9 | NDR(0.5) | 0.5 |
| O8CDD | 12 | 0.5 | O8CDF | NDR(0.5) | 0.5 |

Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 82 |
| 13C-T4CDD | 85 |
| 13C-P5CDF | 91 |
| 13C-P5CDD | 100 |
| 13C-H6CDF | 92 |
| 13C-H6CDD | 99 |
| 13C-H7CDF | 92 |
| 13C-H7CDD | 88 |
| 13C-O8CDD | 82 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 3.85 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 3.62 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved



ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN678

AXYS FILE: L1936-11

CLIENT: Hatfield Consultants Ltd.
 CLIENT NO.: 2607
 SAMPLE TYPE: Milk

DATE: 14-Sept-1999
 REVISED: 05-Oct-1999
 METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 33.6 g wet
 Human Breast Milk (wet weight)

INSTRUMENT: GC-HRMS

% LIPID: 3.2
 Primiparous Female

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.16 | 0.01 | T4CDF - Total | ND | 0.01 |
| 2,3,7,8 | 0.16 | 0.01 | 2,3,7,8 | NDR(0.01) | 0.01 |
| P5CDD - Total | 0.13 | 0.01 | P5CDF - Total | 0.14 | 0.01 |
| 1,2,3,7,8 | 0.13 | 0.01 | 1,2,3,7,8 | 0.02 | 0.01 |
| | | | 2,3,4,7,8 | 0.12 | 0.01 |
| H6CDD - Total | 0.44 | 0.01 | H6CDF - Total | 0.83 | 0.01 |
| 1,2,3,4,7,8 | 0.08 | 0.01 | 1,2,3,4,7,8 | 0.49 | 0.01 |
| 1,2,3,6,7,8 | 0.36 | 0.01 | 1,2,3,6,7,8 | 0.29 | 0.01 |
| 1,2,3,7,8,9 | NDR(0.10) | 0.01 | 2,3,4,6,7,8 | 0.03 | 0.01 |
| | | | 1,2,3,7,8,9 | 0.02 | 0.01 |
| H7CDD - Total | 0.44 | 0.01 | H7CDF - Total | 0.38 | 0.01 |
| 1,2,3,4,6,7,8 | 0.44 | 0.01 | 1,2,3,4,6,7,8 | 0.38 | 0.01 |
| | | | 1,2,3,4,7,8,9 | NDR(0.06) | 0.01 |
| O8CDD | 1.4 | 0.01 | O8CDF | ND | 0.01 |

Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 89 |
| 13C-T4CDD | 92 |
| 13C-P5CDF | 90 |
| 13C-P5CDD | 100 |
| 13C-H6CDF | 97 |
| 13C-H6CDD | 97 |
| 13C-H7CDF | 91 |
| 13C-H7CDD | 92 |
| 13C-O8CDD | 95 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.423 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.422 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN678

AXYS FILE: L1936-11

CLIENT: Hatfield Consultants Ltd.

DATE: 30-Sept-1999

CLIENT NO.: 2607

REVISED: 06-Oct-1999

SAMPLE TYPE: Milk

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 1.07 g lipid

Hong Van Commune
 Human Breast Milk (lipid basis)

INSTRUMENT: GC-HRMS

% LIPID: 3.2

Primiparous Female

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 5.0 | 0.3 | T4CDF - Total | ND | 0.3 |
| 2,3,7,8 | 5.0 | 0.3 | 2,3,7,8 | NDR(0.3) | 0.3 |
| P5CDD - Total | 4.1 | 0.3 | P5CDF - Total | 4.6 | 0.3 |
| 1,2,3,7,8 | 4.1 | 0.3 | 1,2,3,7,8 | 0.8 | 0.3 |
| | | | 2,3,4,7,8 | 3.8 | 0.3 |
| H6CDD - Total | 14 | 0.3 | H6CDF - Total | 25 | 0.3 |
| 1,2,3,4,7,8 | 2.5 | 0.3 | 1,2,3,4,7,8 | 15 | 0.3 |
| 1,2,3,6,7,8 | 11 | 0.3 | 1,2,3,6,7,8 | 9.1 | 0.3 |
| 1,2,3,7,8,9 | NDR(3.1) | 0.3 | 2,3,4,6,7,8 | 0.8 | 0.3 |
| | | | 1,2,3,7,8,9 | 0.5 | 0.3 |
| H7CDD - Total | 14 | 0.3 | H7CDF - Total | 12 | 0.3 |
| 1,2,3,4,6,7,8 | 14 | 0.3 | 1,2,3,4,6,7,8 | 12 | 0.3 |
| | | | 1,2,3,4,7,8,9 | NDR(1.9) | 0.3 |
| O8CDD | 43 | 0.3 | O8CDF | ND | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 89 |
| 13C-T4CDD | 92 |
| 13C-P5CDF | 90 |
| 13C-P5CDD | 100 |
| 13C-H6CDF | 97 |
| 13C-H6CDD | 97 |
| 13C-H7CDF | 91 |
| 13C-H7CDD | 92 |
| 13C-O8CDD | 95 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 13.2 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 13.2 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN686

AXYS FILE: L1936-12

CLIENT: Hatfield Consultants Ltd.

DATE: 14-Sept-1999

CLIENT NO.: 2607

SAMPLE TYPE: Milk

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 31.1 g wet

Hong Van Commune
 Human Breast Milk (wet weight)

INSTRUMENT: GC-HRMS

% LIPID: 1.8

Primiparous Female

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.03 | 0.01 | T4CDF - Total | ND | 0.01 |
| 2,3,7,8 | 0.03 | 0.01 | 2,3,7,8 | NDR (0.01) | 0.01 |
| P5CDD - Total | 0.02 | 0.01 | P5CDF - Total | ND | 0.01 |
| 1,2,3,7,8 | 0.02 | 0.01 | 1,2,3,7,8 | ND | 0.01 |
| | | | 2,3,4,7,8 | NDR(0.03) | 0.01 |
| H6CDD - Total | 0.04 | 0.01 | H6CDF - Total | 0.08 | 0.01 |
| 1,2,3,4,7,8 | 0.01 | 0.01 | 1,2,3,4,7,8 | 0.05 | 0.01 |
| 1,2,3,6,7,8 | 0.03 | 0.01 | 1,2,3,6,7,8 | 0.03 | 0.01 |
| 1,2,3,7,8,9 | NDR(0.01) | 0.01 | 2,3,4,6,7,8 | ND | 0.01 |
| | | | 1,2,3,7,8,9 | ND | 0.01 |
| H7CDD - Total | 0.04 | 0.01 | H7CDF - Total | ND | 0.01 |
| 1,2,3,4,6,7,8 | 0.04 | 0.01 | 1,2,3,4,6,7,8 | NDR(0.03) | 0.01 |
| | | | 1,2,3,4,7,8,9 | ND | 0.01 |
| O8CDD | 0.17 | 0.01 | O8CDF | NDR(0.01) | 0.01 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 70 |
| 13C-T4CDD | 69 |
| 13C-P5CDF | 72 |
| 13C-P5CDD | 79 |
| 13C-H6CDF | 88 |
| 13C-H6CDD | 82 |
| 13C-H7CDF | 84 |
| 13C-H7CDD | 74 |
| 13C-O8CDD | 74 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.054 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.049 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Hamilton
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: 99VN686

AXYS FILE: L1936-12

CLIENT: Hatfield Consultants Ltd.
 CLIENT NO.: 2607
 SAMPLE TYPE: Milk

DATE: 30-Sept-1999
 REVISED: 06-Oct-1999
 METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 0.560 g lipid
 % LIPID: 1.8
 Hong Van Commune
 Human Breast Milk (lipid basis)
 Primiparous Female

INSTRUMENT: GC-HRMS
 CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 1.4 | 0.6 | T4CDF - Total | ND | 0.6 |
| 2,3,7,8 | 1.4 | 0.6 | 2,3,7,8 | NDR (0.6) | 0.6 |
| P5CDD - Total | 1.2 | 0.6 | P5CDF - Total | ND | 0.6 |
| 1,2,3,7,8 | 1.2 | 0.6 | 1,2,3,7,8 | ND | 0.6 |
| | | | 2,3,4,7,8 | NDR(1.7) | 0.6 |
| H6CDD - Total | 2.0 | 0.6 | H6CDF - Total | 4.4 | 0.6 |
| 1,2,3,4,7,8 | 0.6 | 0.6 | 1,2,3,4,7,8 | 2.9 | 0.6 |
| 1,2,3,6,7,8 | 1.4 | 0.6 | 1,2,3,6,7,8 | 1.5 | 0.6 |
| 1,2,3,7,8,9 | NDR(0.6) | 0.6 | 2,3,4,6,7,8 | ND | 0.6 |
| | | | 1,2,3,7,8,9 | ND | 0.6 |
| H7CDD - Total | 1.9 | 0.6 | H7CDF - Total | ND | 0.6 |
| 1,2,3,4,6,7,8 | 1.9 | 0.6 | 1,2,3,4,6,7,8 | NDR(1.7) | 0.6 |
| | | | 1,2,3,4,7,8,9 | ND | 0.6 |
| O8CDD | 9.4 | 0.6 | O8CDF | NDR(0.6) | 0.6 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 70 |
| 13C-T4CDD | 69 |
| 13C-P5CDF | 72 |
| 13C-P5CDD | 79 |
| 13C-H6CDF | 88 |
| 13C-H6CDD | 82 |
| 13C-H7CDF | 84 |
| 13C-H7CDD | 74 |
| 13C-O8CDD | 74 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 2.99 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 2.72 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001B

| | | | |
|---------------------|---------------------------|---|------------------------|
| CLIENT SAMPLE I.D.: | 99VN579 | AXYS FILE: | L2043-2 i |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 21-Dec-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-M-04/Ver.3 |
| SAMPLE TYPE: | Milk | | |
| SAMPLE SIZE: | 18.4 g wet | Hong Thuong Commune Human Breast Milk (wet weight) | INSTRUMENT: GC-HRMS |
| % LIPID: | 1.6 | Primiparous Female | CONCENTRATION IN: pg/g |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.17 | 0.005 | T4CDF - Total | 0.024 | 0.005 |
| 2,3,7,8 | 0.17 | 0.005 | 2,3,7,8 | 0.017 | 0.005 |
| P5CDD - Total | 0.039 | 0.005 | P5CDF - Total | 0.083 | 0.005 |
| 1,2,3,7,8 | 0.039 | 0.005 | 1,2,3,7,8 | 0.030 | 0.005 |
| | | | 2,3,4,7,8 | 0.053 | 0.005 |
| H6CDD - Total | 0.12 | 0.005 | H6CDF - Total | 0.39 | 0.005 |
| 1,2,3,4,7,8 | 0.022 | 0.005 | 1,2,3,4,7,8 | 0.24 | 0.005 |
| 1,2,3,6,7,8 | 0.065 | 0.005 | 1,2,3,6,7,8 | 0.12 | 0.005 |
| 1,2,3,7,8,9 | 0.036 | 0.005 | 2,3,4,6,7,8 | 0.019 | 0.005 |
| | | | 1,2,3,7,8,9 | 0.016 | 0.005 |
| H7CDD - Total | 0.18 | 0.005 | H7CDF - Total | 0.20 | 0.007 |
| 1,2,3,4,6,7,8 | 0.16 | 0.005 | 1,2,3,4,6,7,8 | 0.16 | 0.007 |
| | | | 1,2,3,4,7,8,9 | 0.034 | 0.007 |
| O8CDD | 0.48 | 0.006 | O8CDF | 0.043 | 0.005 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 80 |
| 13C-T4CDD | 83 |
| 13C-P5CDF | 73 |
| 13C-P5CDD | 78 |
| 13C-H6CDF | 79 |
| 13C-H6CDD | 78 |
| 13C-H7CDF | 65 |
| 13C-H7CDD | 66 |
| 13C-O8CDD | 58 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

2,3,7,8 - TCDD TEQs (ND=1/2 DL) = 0.271 pg/g
 2,3,7,8 - TCDD TEQs (ND=0) = 0.271 pg/g

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001B

| | | | |
|----------------------------|---|--------------------------|----------------------|
| CLIENT SAMPLE I.D.: | 99VN579 | AXYS FILE: | L2043-2 i |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 21-Dec-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-M-04/Ver.3 |
| SAMPLE TYPE: | Milk | INSTRUMENT: | GC-HRMS |
| SAMPLE SIZE: | 0.29 g lipid | CONCENTRATION IN: | pg/g |
| | Hong Thuong Commune Human Breast Milk (lipid basis) Primiparous Female | | |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 11 | 0.32 | T4CDF - Total | 1.5 | 0.32 |
| 2,3,7,8 | 11 | 0.32 | 2,3,7,8 | 1.1 | 0.32 |
| P5CDD - Total | 2.5 | 0.32 | P5CDF - Total | 5.3 | 0.32 |
| 1,2,3,7,8 | 2.5 | 0.32 | 1,2,3,7,8 | 1.9 | 0.32 |
| | | | 2,3,4,7,8 | 3.4 | 0.32 |
| H6CDD - Total | 7.8 | 0.32 | H6CDF - Total | 25 | 0.32 |
| 1,2,3,4,7,8 | 1.4 | 0.32 | 1,2,3,4,7,8 | 15 | 0.32 |
| 1,2,3,6,7,8 | 4.1 | 0.32 | 1,2,3,6,7,8 | 7.7 | 0.32 |
| 1,2,3,7,8,9 | 2.3 | 0.32 | 2,3,4,6,7,8 | 1.2 | 0.32 |
| | | | 1,2,3,7,8,9 | 1.0 | 0.32 |
| H7CDD - Total | 11 | 0.32 | H7CDF - Total | 12 | 0.44 |
| 1,2,3,4,6,7,8 | 10 | 0.32 | 1,2,3,4,6,7,8 | 10 | 0.44 |
| | | | 1,2,3,4,7,8,9 | 2.2 | 0.44 |
| O8CDD | 31 | 0.38 | O8CDF | 2.7 | 0.32 |

Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 80 |
| 13C-T4CDD | 83 |
| 13C-P5CDF | 73 |
| 13C-P5CDD | 78 |
| 13C-H6CDF | 79 |
| 13C-H6CDD | 78 |
| 13C-H7CDF | 65 |
| 13C-H7CDD | 66 |
| 13C-O8CDD | 58 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 17.2 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 17.2 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001B

CLIENT SAMPLE I.D.: 99VN586

AXYS FILE: L2043-8 i

CLIENT: Hatfield Consultants Ltd.

DATE: 21-Dec-1999

CLIENT NO.: 2607

SAMPLE TYPE: Milk

Hong Thuong Commune

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 10.5 g wet Human Breast Milk (wet weight)

INSTRUMENT: GC-HRMS

% LIPID: 1.4 Primiparous Female

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.12 | 0.008 | T4CDF - Total | 0.014 | 0.005 |
| 2,3,7,8 | 0.12 | 0.008 | 2,3,7,8 | 0.014 | 0.005 |
| P5CDD - Total | ND | 0.005 | P5CDF - Total | 0.066 | 0.005 |
| 1,2,3,7,8 | NDR(0.055) | 0.005 | 1,2,3,7,8 | 0.017 | 0.005 |
| | | | 2,3,4,7,8 | 0.049 | 0.005 |
| H6CDD - Total | 0.12 | 0.005 | H6CDF - Total | 0.14 | 0.005 |
| 1,2,3,4,7,8 | 0.021 | 0.005 | 1,2,3,4,7,8 | 0.11 | 0.005 |
| 1,2,3,6,7,8 | 0.064 | 0.005 | 1,2,3,6,7,8 | NDR(0.050) | 0.005 |
| 1,2,3,7,8,9 | 0.023 | 0.005 | 2,3,4,6,7,8 | 0.018 | 0.005 |
| | | | 1,2,3,7,8,9 | 0.012 | 0.005 |
| H7CDD - Total | 0.14 | 0.006 | H7CDF - Total | 0.091 | 0.011 |
| 1,2,3,4,6,7,8 | 0.10 | 0.006 | 1,2,3,4,6,7,8 | 0.065 | 0.011 |
| | | | 1,2,3,4,7,8,9 | 0.026 | 0.011 |
| O8CDD | 0.46 | 0.011 | O8CDF | 0.069 | 0.010 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 73 |
| 13C-T4CDD | 71 |
| 13C-P5CDF | 64 |
| 13C-P5CDD | 68 |
| 13C-H6CDF | 73 |
| 13C-H6CDD | 71 |
| 13C-H7CDF | 55 |
| 13C-H7CDD | 55 |
| 13C-O8CDD | 43 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.180 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.178 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001B

| | | | |
|----------------------------|----------------------------------|--|----------------------|
| CLIENT SAMPLE I.D.: | 99VN586 | AXYS FILE: | L2043-8 i |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 21-Dec-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-M-04/Ver.3 |
| SAMPLE TYPE: | Milk | INSTRUMENT: | GC-HRMS |
| | Hong Thuong Commune | CONCENTRATION IN: | pg/g |
| SAMPLE SIZE: | 0.15 g lipid | Human Breast Milk (lipid basis) | |
| | Primiparous Female | | |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 8.7 | 0.56 | T4CDF - Total | 1.0 | 0.35 |
| 2,3,7,8 | 8.7 | 0.56 | 2,3,7,8 | 1.0 | 0.35 |
| P5CDD - Total | ND | 0.35 | P5CDF - Total | 4.6 | 0.35 |
| 1,2,3,7,8 | NDR(3.9) | 0.35 | 1,2,3,7,8 | 1.2 | 0.35 |
| | | | 2,3,4,7,8 | 3.4 | 0.35 |
| H6CDD - Total | 8.7 | 0.35 | H6CDF - Total | 10 | 0.35 |
| 1,2,3,4,7,8 | 1.5 | 0.35 | 1,2,3,4,7,8 | 8.0 | 0.35 |
| 1,2,3,6,7,8 | 4.5 | 0.35 | 1,2,3,6,7,8 | NDR(3.5) | 0.35 |
| 1,2,3,7,8,9 | 1.6 | 0.35 | 2,3,4,6,7,8 | 1.3 | 0.35 |
| | | | 1,2,3,7,8,9 | 0.84 | 0.35 |
| H7CDD - Total | 9.5 | 0.42 | H7CDF - Total | 6.4 | 0.77 |
| 1,2,3,4,6,7,8 | 7.2 | 0.42 | 1,2,3,4,6,7,8 | 4.6 | 0.77 |
| | | | 1,2,3,4,7,8,9 | 1.8 | 0.77 |
| O8CDD | 32 | 0.78 | O8CDF | 4.8 | 0.7 |

Surrogate Standards % Recovery

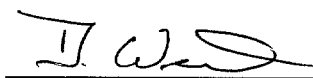
| | |
|------------------|----|
| 13C-T4CDF | 73 |
| 13C-T4CDD | 71 |
| 13C-P5CDF | 64 |
| 13C-P5CDD | 68 |
| 13C-H6CDF | 73 |
| 13C-H6CDD | 71 |
| 13C-H7CDF | 55 |
| 13C-H7CDD | 55 |
| 13C-O8CDD | 43 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

2,3,7,8 - TCDD TEQs (ND=1/2 DL) = 12.6 pg/g

2,3,7,8 - TCDD TEQs (ND=0) = 12.5 pg/g

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.



Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001B

CLIENT SAMPLE I.D.: 99VN592

AXYS FILE: L2043-9 i

CLIENT: Hatfield Consultants Ltd.

DATE: 21-Dec-1999

CLIENT NO.: 2607

SAMPLE TYPE: Milk

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 12.7 g wet

Hong Thuong Commune
Human Breast Milk (wet weight)

INSTRUMENT: GC-HRMS

% LIPID: 2.7

Primiparous Female

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.21 | 0.007 | T4CDF - Total | 0.015 | 0.005 |
| 2,3,7,8 | 0.21 | 0.007 | 2,3,7,8 | 0.015 | 0.005 |
| P5CDD - Total | 0.043 | 0.005 | P5CDF - Total | 0.015 | 0.005 |
| 1,2,3,7,8 | 0.043 | 0.005 | 1,2,3,7,8 | 0.015 | 0.005 |
| | | | 2,3,4,7,8 | NDR(0.041) | 0.005 |
| H6CDD - Total | 0.14 | 0.005 | H6CDF - Total | 0.15 | 0.005 |
| 1,2,3,4,7,8 | 0.026 | 0.005 | 1,2,3,4,7,8 | 0.099 | 0.005 |
| 1,2,3,6,7,8 | 0.073 | 0.005 | 1,2,3,6,7,8 | 0.040 | 0.005 |
| 1,2,3,7,8,9 | 0.025 | 0.005 | 2,3,4,6,7,8 | 0.0080 | 0.005 |
| | | | 1,2,3,7,8,9 | NDR(0.005) | 0.005 |
| H7CDD - Total | 0.095 | 0.006 | H7CDF - Total | 0.10 | 0.009 |
| 1,2,3,4,6,7,8 | 0.095 | 0.006 | 1,2,3,4,6,7,8 | 0.074 | 0.009 |
| | | | 1,2,3,4,7,8,9 | NDR(0.027) | 0.009 |
| O8CDD | 0.50 | 0.010 | O8CDF | NDR(0.071) | 0.009 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 74 |
| 13C-T4CDD | 75 |
| 13C-P5CDF | 66 |
| 13C-P5CDD | 69 |
| 13C-H6CDF | 69 |
| 13C-H6CDD | 67 |
| 13C-H7CDF | 53 |
| 13C-H7CDD | 52 |
| 13C-O8CDD | 41 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.261 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.259 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001B

| | | | |
|----------------------------|--|--------------------------|----------------------|
| CLIENT SAMPLE I.D.: | 99VN592 | AXYS FILE: | L2043-9 i |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 21/Dec/1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-M-04/Ver.3 |
| SAMPLE TYPE: | Milk | INSTRUMENT: | GC-HRMS |
| SAMPLE SIZE: | 0.34 g lipid | CONCENTRATION IN: | pg/g |
| | Hong Thuong Commune | | |
| | Human Breast Milk (lipid basis) | | |
| | Primiparous Female | | |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 7.7 | 0.26 | T4CDF - Total | 0.56 | 0.19 |
| 2,3,7,8 | 7.7 | 0.26 | 2,3,7,8 | 0.56 | 0.19 |
| P5CDD - Total | 1.6 | 0.19 | P5CDF - Total | 0.56 | 0.19 |
| 1,2,3,7,8 | 1.6 | 0.19 | 1,2,3,7,8 | 0.56 | 0.19 |
| | | | 2,3,4,7,8 | NDR(1.5) | 0.19 |
| H6CDD - Total | 5.4 | 0.19 | H6CDF - Total | 5.7 | 0.19 |
| 1,2,3,4,7,8 | 0.97 | 0.19 | 1,2,3,4,7,8 | 3.7 | 0.19 |
| 1,2,3,6,7,8 | 2.7 | 0.19 | 1,2,3,6,7,8 | 1.5 | 0.19 |
| 1,2,3,7,8,9 | 0.9 | 0.19 | 2,3,4,6,7,8 | 0.3 | 0.19 |
| | | | 1,2,3,7,8,9 | NDR(0.19) | 0.19 |
| H7CDD - Total | 3.5 | 0.22 | H7CDF - Total | 3.7 | 0.34 |
| 1,2,3,4,6,7,8 | 3.5 | 0.22 | 1,2,3,4,6,7,8 | 2.8 | 0.34 |
| | | | 1,2,3,4,7,8,9 | NDR(1.0) | 0.34 |
| O8CDD | 18 | 0.37 | O8CDF | NDR(2.7) | 0.34 |

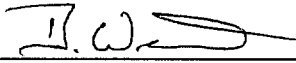
Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 74 |
| 13C-T4CDD | 75 |
| 13C-P5CDF | 66 |
| 13C-P5CDD | 69 |
| 13C-H6CDF | 69 |
| 13C-H6CDD | 67 |
| 13C-H7CDF | 53 |
| 13C-H7CDD | 52 |
| 13C-O8CDD | 41 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

2,3,7,8 - TCDD TEQs (ND=1/2 DL) = 9.73 pg/g
 2,3,7,8 - TCDD TEQs (ND=0) = 9.68 pg/g

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001B

CLIENT SAMPLE I.D.: 99VN594

AXYS FILE: L2043-10 i

CLIENT: Hatfield Consultants Ltd.

DATE: 21-Dec-1999

CLIENT NO.: 2607

SAMPLE TYPE: Milk

METHOD NO.: DX-M-04/Ver.3

**Hong Thuong Commune
Human Breast Milk (wet weight)**

SAMPLE SIZE: 19.2 g wet

INSTRUMENT: GC-HRMS

% LIPID: 2.1

Primiparous Female

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.24 | 0.005 | T4CDF - Total | 0.012 | 0.005 |
| 2,3,7,8 | 0.24 | 0.005 | 2,3,7,8 | 0.012 | 0.005 |
| P5CDD - Total | 0.056 | 0.005 | P5CDF - Total | 0.13 | 0.005 |
| 1,2,3,7,8 | 0.056 | 0.005 | 1,2,3,7,8 | 0.029 | 0.005 |
| | | | 2,3,4,7,8 | 0.099 | 0.005 |
| H6CDD - Total | 0.16 | 0.005 | H6CDF - Total | 0.49 | 0.005 |
| 1,2,3,4,7,8 | 0.027 | 0.005 | 1,2,3,4,7,8 | 0.30 | 0.005 |
| 1,2,3,6,7,8 | 0.091 | 0.005 | 1,2,3,6,7,8 | 0.17 | 0.005 |
| 1,2,3,7,8,9 | 0.039 | 0.005 | 2,3,4,6,7,8 | 0.018 | 0.005 |
| | | | 1,2,3,7,8,9 | NDR(0.009) | 0.005 |
| H7CDD - Total | 0.15 | 0.005 | H7CDF - Total | 0.28 | 0.005 |
| 1,2,3,4,6,7,8 | 0.13 | 0.005 | 1,2,3,4,6,7,8 | 0.24 | 0.005 |
| | | | 1,2,3,4,7,8,9 | 0.041 | 0.005 |
| O8CDD | 0.64 | 0.006 | O8CDF | NDR(0.031) | 0.005 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 68 |
| 13C-T4CDD | 73 |
| 13C-P5CDF | 68 |
| 13C-P5CDD | 63 |
| 13C-H6CDF | 64 |
| 13C-H6CDD | 64 |
| 13C-H7CDF | 52 |
| 13C-H7CDD | 52 |
| 13C-O8CDD | 43 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.385 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.385 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001B

| | | | |
|----------------------------|---|--------------------------|----------------------|
| CLIENT SAMPLE I.D.: | 99VN594 | AXYS FILE: | L2043-10 i |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 21-Dec-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-M-04/Ver.3 |
| SAMPLE TYPE: | Milk | INSTRUMENT: | GC-HRMS |
| SAMPLE SIZE: | 0.40 g lipid | CONCENTRATION IN: | pg/g |
| | Hong Thuong Commune Human Breast Milk (lipid basis) Primiparous Female | | |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 11 | 0.24 | T4CDF - Total | 0.58 | 0.24 |
| 2,3,7,8 | 11 | 0.24 | 2,3,7,8 | 0.58 | 0.24 |
| P5CDD - Total | 2.7 | 0.24 | P5CDF - Total | 6.1 | 0.24 |
| 1,2,3,7,8 | 2.7 | 0.24 | 1,2,3,7,8 | 1.4 | 0.24 |
| | | | 2,3,4,7,8 | 4.8 | 0.24 |
| H6CDD - Total | 7.8 | 0.24 | H6CDF - Total | 23 | 0.24 |
| 1,2,3,4,7,8 | 1.3 | 0.24 | 1,2,3,4,7,8 | 14 | 0.24 |
| 1,2,3,6,7,8 | 4.4 | 0.24 | 1,2,3,6,7,8 | 8.0 | 0.24 |
| 1,2,3,7,8,9 | 1.9 | 0.24 | 2,3,4,6,7,8 | 0.86 | 0.24 |
| | | | 1,2,3,7,8,9 | NDR(0.43) | 0.24 |
| H7CDD - Total | 7.2 | 0.24 | H7CDF - Total | 13 | 0.24 |
| 1,2,3,4,6,7,8 | 6.1 | 0.24 | 1,2,3,4,6,7,8 | 11 | 0.24 |
| | | | 1,2,3,4,7,8,9 | 2.0 | 0.24 |
| O8CDD | 30 | 0.29 | O8CDF | NDR(1.5) | 0.24 |

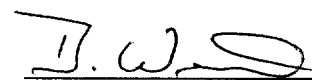
Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 68 |
| 13C-T4CDD | 73 |
| 13C-P5CDF | 68 |
| 13C-P5CDD | 63 |
| 13C-H6CDF | 64 |
| 13C-H6CDD | 64 |
| 13C-H7CDF | 52 |
| 13C-H7CDD | 52 |
| 13C-O8CDD | 43 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 18.5 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 18.5 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001B

CLIENT SAMPLE I.D.: 99VN628

AXYS FILE: L2043-39 i

CLIENT: Hatfield Consultants Ltd.

DATE: 21-Dec-1999

CLIENT NO.: 2607

SAMPLE TYPE: Milk

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 20.3 g wet

A So Commune
 Human Breast Milk (wet weight)

INSTRUMENT: GC-HRMS

% LIPID: 3.2

Multiparous Female

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 1.0 | 0.005 | T4CDF - Total | 0.017 | 0.005 |
| 2,3,7,8 | 1.0 | 0.005 | 2,3,7,8 | 0.017 | 0.005 |
| P5CDD - Total | 0.053 | 0.005 | P5CDF - Total | 0.034 | 0.005 |
| 1,2,3,7,8 | 0.053 | 0.005 | 1,2,3,7,8 | 0.011 | 0.005 |
| | | | 2,3,4,7,8 | 0.023 | 0.005 |
| H6CDD - Total | 0.040 | 0.005 | H6CDF - Total | 0.096 | 0.005 |
| 1,2,3,4,7,8 | 0.013 | 0.005 | 1,2,3,4,7,8 | 0.061 | 0.005 |
| 1,2,3,6,7,8 | 0.027 | 0.005 | 1,2,3,6,7,8 | 0.028 | 0.005 |
| 1,2,3,7,8,9 | NDR(0.011) | 0.005 | 2,3,4,6,7,8 | 0.007 | 0.005 |
| | | | 1,2,3,7,8,9 | ND | 0.005 |
| H7CDD - Total | 0.059 | 0.005 | H7CDF - Total | 0.051 | 0.005 |
| 1,2,3,4,6,7,8 | 0.046 | 0.005 | 1,2,3,4,6,7,8 | 0.051 | 0.005 |
| | | | 1,2,3,4,7,8,9 | NDR(0.019) | 0.005 |
| O8CDD | 0.20 | 0.007 | O8CDF | NDR(0.033) | 0.006 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 60 |
| 13C-T4CDD | 57 |
| 13C-P5CDF | 61 |
| 13C-P5CDD | 61 |
| 13C-H6CDF | 71 |
| 13C-H6CDD | 69 |
| 13C-H7CDF | 53 |
| 13C-H7CDD | 48 |
| 13C-O8CDD | 32 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 1.09 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 1.09 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

J.W.

 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001B

CLIENT SAMPLE I.D.: 99VN628

AXYS FILE: L2043-39 i

CLIENT: Hatfield Consultants Ltd.

DATE: 21-Dec-1999

CLIENT NO.: 2607

SAMPLE TYPE: Milk

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 0.65 g lipid

A So Commune
 Human Breast Milk (lipid basis)
 Multiparous Female

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 32 | 0.16 | T4CDF - Total | 0.53 | 0.16 |
| 2,3,7,8 | 32 | 0.16 | 2,3,7,8 | 0.53 | 0.16 |
| P5CDD - Total | 1.7 | 0.16 | P5CDF - Total | 1.1 | 0.16 |
| 1,2,3,7,8 | 1.7 | 0.16 | 1,2,3,7,8 | 0.34 | 0.16 |
| | | | 2,3,4,7,8 | 0.72 | 0.16 |
| H6CDD - Total | 1.2 | 0.16 | H6CDF - Total | 3.0 | 0.16 |
| 1,2,3,4,7,8 | 0.41 | 0.16 | 1,2,3,4,7,8 | 1.9 | 0.16 |
| 1,2,3,6,7,8 | 0.84 | 0.16 | 1,2,3,6,7,8 | 0.87 | 0.16 |
| 1,2,3,7,8,9 | NDR(0.34) | 0.16 | 2,3,4,6,7,8 | 0.22 | 0.16 |
| | | | 1,2,3,7,8,9 | ND | 0.16 |
| H7CDD - Total | 1.8 | 0.16 | H7CDF - Total | 1.6 | 0.16 |
| 1,2,3,4,6,7,8 | 1.4 | 0.16 | 1,2,3,4,6,7,8 | 1.6 | 0.16 |
| | | | 1,2,3,4,7,8,9 | NDR(0.59) | 0.16 |
| O8CDD | 6.2 | 0.22 | O8CDF | NDR(1.0) | 0.19 |


Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 60 |
| 13C-T4CDD | 57 |
| 13C-P5CDF | 61 |
| 13C-P5CDD | 61 |
| 13C-H6CDF | 71 |
| 13C-H6CDD | 69 |
| 13C-H7CDF | 53 |
| 13C-H7CDD | 48 |
| 13C-O8CDD | 32 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 34.1 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 34 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

Section 4

**Dioxin/Furan Analysis Reports:
Human Whole Blood**

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP.#1

AXYS FILE: L1935-1 L

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Oct-1999

CLIENT NO.: 2607

REVISED: 15-Feb-2000

SAMPLE TYPE: Blood

METHOD NO. DX-B-06/Ver. 1

SAMPLE SIZE: 50.5 g (wet)

**A So Commune
 Human Blood (wet weight)
 Females <25**

INSTRUMENT GC-HRMS

% LIPID: 0.3

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.038 | 0.012 | T4CDF - Total | ND | 0.005 |
| 2,3,7,8 | 0.038 | 0.012 | 2,3,7,8 | ND | 0.005 |
| P5CDD - Total | ND | 0.005 | P5CDF - Total | 0.014 | 0.005 |
| 1,2,3,7,8 | NDR(0.007) | 0.005 | 1,2,3,7,8 | ND | 0.005 |
| | | | 2,3,4,7,8 | ND | 0.005 |
| H6CDD - Total | 0.006 | 0.005 | H6CDF - Total | 0.046 | 0.005 |
| 1,2,3,4,7,8 | ND | 0.005 | 1,2,3,4,7,8 | 0.019 | 0.005 |
| 1,2,3,6,7,8 | NDR(0.010) | 0.005 | 1,2,3,6,7,8 | 0.012 | 0.005 |
| 1,2,3,7,8,9 | NDR(0.006) | 0.005 | 2,3,4,6,7,8 | NDR(0.005) | 0.005 |
| | | | 1,2,3,7,8,9 | ND | 0.005 |
| H7CDD - Total | 0.078 | 0.005 | H7CDF - Total | 0.064 | 0.005 |
| 1,2,3,4,6,7,8 | 0.045 | 0.005 | 1,2,3,4,6,7,8 | 0.046 | 0.005 |
| | | | 1,2,3,4,7,8,9 | 0.006 | 0.005 |
| O8CDD | 0.24 | 0.005 | O8CDF | 0.021 | 0.005 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 78 |
| 13C-T4CDD | 84 |
| 13C-P5CDF | 92 |
| 13C-P5CDD | 98 |
| 13C-H6CDF | 82 |
| 13C-H6CDD | 84 |
| 13C-H7CDF | 63 |
| 13C-H7CDD | 60 |
| 13C-O8CDD | 63 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.0465 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.0423 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: **COMP.#1**

AXYS FILE: **L1935-1 L**

CLIENT: **Hatfield Consultants Ltd.**

DATE: **28-Oct-1999**

CLIENT NO.: **2607**

SAMPLE TYPE: **Blood**

METHOD NO.: **DX-B-06/Ver.1**

SAMPLE SIZE: **0.141 g lipid**

**A So Commune
Human Blood (lipid basis)
Females <25**

INSTRUMENT: **GC-HRMS**

% LIPID: **0.3**

CONCENTRATION IN: **pg/g**

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 14 | 4.3 | T4CDF - Total | ND | 1.8 |
| 2,3,7,8 | 14 | 4.3 | 2,3,7,8 | ND | 1.8 |
| P5CDD - Total | ND | 1.8 | P5CDF - Total | 5.0 | 1.8 |
| 1,2,3,7,8 | NDR(2.5) | 1.8 | 1,2,3,7,8 | ND | 1.8 |
| | | | 2,3,4,7,8 | ND | 1.8 |
| H6CDD - Total | 2.1 | 1.8 | H6CDF - Total | 16 | 1.8 |
| 1,2,3,4,7,8 | ND | 1.8 | 1,2,3,4,7,8 | 6.8 | 1.8 |
| 1,2,3,6,7,8 | NDR(3.6) | 1.8 | 1,2,3,6,7,8 | 4.3 | 1.8 |
| 1,2,3,7,8,9 | NDR(2.1) | 1.8 | 2,3,4,6,7,8 | NDR(1.8) | 1.8 |
| | | | 1,2,3,7,8,9 | ND | 1.8 |
| H7CDD - Total | 28 | 1.8 | H7CDF - Total | 23 | 1.8 |
| 1,2,3,4,6,7,8 | 16 | 1.8 | 1,2,3,4,6,7,8 | 16 | 1.8 |
| | | | 1,2,3,4,7,8,9 | 2.1 | 1.8 |
| O8CDD | 86 | 1.8 | O8CDF | 7.5 | 1.8 |

Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 78 |
| 13C-T4CDD | 84 |
| 13C-P5CDF | 92 |
| 13C-P5CDD | 98 |
| 13C-H6CDF | 82 |
| 13C-H6CDD | 84 |
| 13C-H7CDF | 63 |
| 13C-H7CDD | 60 |
| 13C-O8CDD | 63 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 16.6 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 15.1 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved _____



ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP.#2

AXYS FILE: L1935-2 L

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Oct-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blood

METHOD NO. DX-B-06/Ver. 1

SAMPLE SIZE: 50.9 g (wet)

**A So Commune
Human Blood (wet weight)
Females >25**

INSTRUMENT GC-HRMS

% LIPID: 0.3

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.049 | 0.008 | T4CDF - Total | ND | 0.010 |
| 2,3,7,8 | 0.049 | 0.008 | 2,3,7,8 | ND | 0.010 |
| P5CDD - Total | ND | 0.005 | P5CDF - Total | ND | 0.005 |
| 1,2,3,7,8 | NDR(0.006) | 0.005 | 1,2,3,7,8 | ND | 0.005 |
| | | | 2,3,4,7,8 | NDR(0.005) | 0.005 |
| H6CDD - Total | ND | 0.005 | H6CDF - Total | ND | 0.007 |
| 1,2,3,4,7,8 | NDR(0.006) | 0.005 | 1,2,3,4,7,8 | NDR(0.016) | 0.007 |
| 1,2,3,6,7,8 | NDR(0.009) | 0.005 | 1,2,3,6,7,8 | NDR(0.008) | 0.007 |
| 1,2,3,7,8,9 | ND | 0.005 | 2,3,4,6,7,8 | ND | 0.007 |
| | | | 1,2,3,7,8,9 | ND | 0.007 |
| H7CDD - Total | ND | 0.005 | H7CDF - Total | 0.039 | 0.005 |
| 1,2,3,4,6,7,8 | NDR(0.022) | 0.005 | 1,2,3,4,6,7,8 | 0.039 | 0.005 |
| | | | 1,2,3,4,7,8,9 | NDR(0.008) | 0.005 |
| O8CDD | 0.13 | 0.018 | O8CDF | ND | 0.010 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 55 |
| 13C-T4CDD | 56 |
| 13C-P5CDF | 52 |
| 13C-P5CDD | 49 |
| 13C-H6CDF | 67 |
| 13C-H6CDD | 65 |
| 13C-H7CDF | 40 |
| 13C-H7CDD | 34 |
| 13C-O8CDD | 28 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|--------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.0548 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.0495 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP.#2

AXYS FILE: L1935-2 L

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Oct-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blood

METHOD NO.: DX-B-06/Ver.1

SAMPLE SIZE: 0.152 g lipid

A So Commune
Human Blood (lipid basis)
Females >25

INSTRUMENT: GC-HRMS

% LIPID: 0.3

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 16 | 2.7 | T4CDF - Total | ND | 3.3 |
| 2,3,7,8 | 16 | 2.7 | 2,3,7,8 | ND | 3.3 |
| P5CDD - Total | ND | 1.7 | P5CDF - Total | ND | 1.7 |
| 1,2,3,7,8 | NDR(2.0) | 1.7 | 1,2,3,7,8 | ND | 1.7 |
| | | | 2,3,4,7,8 | NDR(1.7) | 1.7 |
| H6CDD - Total | ND | 1.7 | H6CDF - Total | ND | 2.3 |
| 1,2,3,4,7,8 | NDR(2.0) | 1.7 | 1,2,3,4,7,8 | NDR(5.3) | 2.3 |
| 1,2,3,6,7,8 | NDR(3.0) | 1.7 | 1,2,3,6,7,8 | NDR(2.7) | 2.3 |
| 1,2,3,7,8,9 | ND | 1.7 | 2,3,4,6,7,8 | ND | 2.3 |
| | | | 1,2,3,7,8,9 | ND | 2.3 |
| H7CDD - Total | ND | 1.7 | H7CDF - Total | 13 | 1.7 |
| 1,2,3,4,6,7,8 | NDR(7.3) | 1.7 | 1,2,3,4,6,7,8 | 13 | 1.7 |
| | | | 1,2,3,4,7,8,9 | NDR(2.7) | 1.7 |
| O8CDD | 42 | 6.0 | O8CDF | ND | 3.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 55 |
| 13C-T4CDD | 56 |
| 13C-P5CDF | 52 |
| 13C-P5CDD | 49 |
| 13C-H6CDF | 67 |
| 13C-H6CDD | 65 |
| 13C-H7CDF | 40 |
| 13C-H7CDD | 34 |
| 13C-O8CDD | 28 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 18.3 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 16.5 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP.#3

AXYS FILE: L1935-3 L

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Oct-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blood

METHOD NO.: DX-B-06/Ver.1

SAMPLE SIZE: 25.8 g (wet)

**A So Commune
 Human Blood (wet weight)
 Males <25**

INSTRUMENT GC-HRMS

% LIPID: 0.3

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.090 | 0.014 | T4CDF - Total | ND | 0.007 |
| 2,3,7,8 | 0.090 | 0.014 | 2,3,7,8 | ND | 0.007 |
| P5CDD - Total | ND | 0.005 | P5CDF - Total | ND | 0.005 |
| 1,2,3,7,8 | NDR(0.010) | 0.005 | 1,2,3,7,8 | ND | 0.005 |
| | | | 2,3,4,7,8 | NDR(0.012) | 0.005 |
| H6CDD - Total | ND | 0.005 | H6CDF - Total | 0.074 | 0.005 |
| 1,2,3,4,7,8 | NDR(0.006) | 0.005 | 1,2,3,4,7,8 | 0.041 | 0.005 |
| 1,2,3,6,7,8 | NDR(0.018) | 0.005 | 1,2,3,6,7,8 | 0.026 | 0.005 |
| 1,2,3,7,8,9 | ND | 0.005 | 2,3,4,6,7,8 | ND | 0.005 |
| | | | 1,2,3,7,8,9 | ND | 0.005 |
| H7CDD - Total | 0.052 | 0.005 | H7CDF - Total | ND | 0.006 |
| 1,2,3,4,6,7,8 | 0.035 | 0.005 | 1,2,3,4,6,7,8 | NDR(0.090) | 0.006 |
| | | | 1,2,3,4,7,8,9 | NDR(0.009) | 0.006 |
| O8CDD | 0.14 | 0.011 | O8CDF | NDR(0.011) | 0.011 |

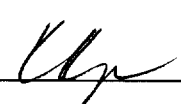
Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 65 |
| 13C-T4CDD | 69 |
| 13C-P5CDF | 69 |
| 13C-P5CDD | 71 |
| 13C-H6CDF | 85 |
| 13C-H6CDD | 82 |
| 13C-H7CDF | 59 |
| 13C-H7CDD | 54 |
| 13C-O8CDD | 58 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.101 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.0972 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

| | | | |
|----------------------------|----------------------------------|----------------------------------|----------------------|
| CLIENT SAMPLE I.D.: | COMP.#3 | AXYS FILE: | L1935-3 L |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 28-Oct-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-B-06/Ver.1 |
| SAMPLE TYPE: | Blood | INSTRUMENT: | GC-HRMS |
| SAMPLE SIZE: | 0.075 g lipid | A So Commune | |
| | | Human Blood (lipid basis) | |
| % LIPID: | 0.3 | Males <25 | |
| | | CONCENTRATION IN: pg/g | |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 31 | 4.8 | T4CDF - Total | ND | 2.4 |
| 2,3,7,8 | 31 | 4.8 | 2,3,7,8 | ND | 2.4 |
| P5CDD - Total | ND | 1.7 | P5CDF - Total | ND | 1.7 |
| 1,2,3,7,8 | NDR(3.4) | 1.7 | 1,2,3,7,8 | ND | 1.7 |
| | | | 2,3,4,7,8 | NDR(4.1) | 1.7 |
| H6CDD - Total | ND | 1.7 | H6CDF - Total | 25 | 1.7 |
| 1,2,3,4,7,8 | NDR(2.1) | 1.7 | 1,2,3,4,7,8 | 14 | 1.7 |
| 1,2,3,6,7,8 | NDR(6.2) | 1.7 | 1,2,3,6,7,8 | 9.0 | 1.7 |
| 1,2,3,7,8,9 | ND | 1.7 | 2,3,4,6,7,8 | ND | 1.7 |
| | | | 1,2,3,7,8,9 | ND | 1.7 |
| H7CDD - Total | 18 | 1.7 | H7CDF - Total | ND | 2.1 |
| 1,2,3,4,6,7,8 | 12 | 1.7 | 1,2,3,4,6,7,8 | NDR(31) | 2.1 |
| | | | 1,2,3,4,7,8,9 | NDR(3.1) | 2.1 |
| O8CDD | 49 | 3.8 | O8CDF | NDR(3.8) | 3.8 |

Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 65 |
| 13C-T4CDD | 69 |
| 13C-P5CDF | 69 |
| 13C-P5CDD | 71 |
| 13C-H6CDF | 85 |
| 13C-H6CDD | 82 |
| 13C-H7CDF | 59 |
| 13C-H7CDD | 54 |
| 13C-O8CDD | 58 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 35.0 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 33.5 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP.#4

AXYS FILE: L1935-4 L

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Oct-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blood

METHOD NO.: DX-B-06/Ver. 1

SAMPLE SIZE: 47.1 g (wet)

**A So Commune
 Human Blood (wet weight)
 Males >25**

INSTRUMENT GC-HRMS

% LIPID: 0.2

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.094 | 0.013 | T4CDF - Total | ND | 0.007 |
| 2,3,7,8 | 0.094 | 0.013 | 2,3,7,8 | ND | 0.007 |
| P5CDD - Total | ND | 0.005 | P5CDF - Total | ND | 0.005 |
| 1,2,3,7,8 | NDR(0.011) | 0.005 | 1,2,3,7,8 | ND | 0.005 |
| | | | 2,3,4,7,8 | NDR(0.011) | 0.005 |
| H6CDD - Total | ND | 0.006 | H6CDF - Total | 0.067 | 0.006 |
| 1,2,3,4,7,8 | ND | 0.006 | 1,2,3,4,7,8 | 0.041 | 0.006 |
| 1,2,3,6,7,8 | NDR(0.023) | 0.006 | 1,2,3,6,7,8 | 0.026 | 0.006 |
| 1,2,3,7,8,9 | ND | 0.006 | 2,3,4,6,7,8 | ND | 0.006 |
| | | | 1,2,3,7,8,9 | ND | 0.006 |
| H7CDD - Total | ND | 0.006 | H7CDF - Total | ND | 0.010 |
| 1,2,3,4,6,7,8 | NDR(0.046) | 0.006 | 1,2,3,4,6,7,8 | NDR(0.076) | 0.010 |
| | | | 1,2,3,4,7,8,9 | NDR(0.011) | 0.010 |
| O8CDD | 0.17 | 0.11 | O8CDF | 0.017 | 0.013 |


Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 63 |
| 13C-T4CDD | 66 |
| 13C-P5CDF | 61 |
| 13C-P5CDD | 61 |
| 13C-H6CDF | 82 |
| 13C-H6CDD | 78 |
| 13C-H7CDF | 54 |
| 13C-H7CDD | 45 |
| 13C-O8CDD | 41 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.105 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.101 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001A

| | | | |
|----------------------------|----------------------------------|--|----------------------|
| CLIENT SAMPLE I.D.: | COMP.#4 | AXYS FILE: | L1935-4 L |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 28-Oct-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-B-06/Ver.1 |
| SAMPLE TYPE: | Blood | INSTRUMENT: | GC-HRMS |
| SAMPLE SIZE: | 0.108 g lipid | A So Commune Human Blood (lipid basis) Males >25 | |
| % LIPID: | 0.2 | | |
| | | CONCENTRATION IN: | pg/g |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 41 | 5.7 | T4CDF - Total | ND | 3.0 |
| 2,3,7,8 | 41 | 5.7 | 2,3,7,8 | ND | 3.0 |
| P5CDD - Total | ND | 2.2 | P5CDF - Total | ND | 2.2 |
| 1,2,3,7,8 | NDR(4.8) | 2.2 | 1,2,3,7,8 | ND | 2.2 |
| | | | 2,3,4,7,8 | NDR(4.8) | 2.2 |
| H6CDD - Total | ND | 2.6 | H6CDF - Total | 29 | 2.6 |
| 1,2,3,4,7,8 | ND | 2.6 | 1,2,3,4,7,8 | 18 | 2.6 |
| 1,2,3,6,7,8 | NDR(10) | 2.6 | 1,2,3,6,7,8 | 11 | 2.6 |
| 1,2,3,7,8,9 | ND | 2.6 | 2,3,4,6,7,8 | ND | 2.6 |
| | | | 1,2,3,7,8,9 | ND | 2.6 |
| H7CDD - Total | ND | 2.6 | H7CDF - Total | ND | 4.3 |
| 1,2,3,4,6,7,8 | NDR(20) | 2.6 | 1,2,3,4,6,7,8 | NDR(33) | 4.3 |
| | | | 1,2,3,4,7,8,9 | NDR(4.8) | 4.3 |
| O8CDD | 72 | 48 | O8CDF | 7.4 | 5.7 |

Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 63 |
| 13C-T4CDD | 66 |
| 13C-P5CDF | 61 |
| 13C-P5CDD | 61 |
| 13C-H6CDF | 82 |
| 13C-H6CDD | 78 |
| 13C-H7CDF | 54 |
| 13C-H7CDD | 45 |
| 13C-O8CDD | 41 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 45.9 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 43.9 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.



 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP.#5

AXYS FILE: L1935-5 L

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Oct-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blood

METHOD NO.: DX-B-06/Ver. 1

SAMPLE SIZE: 45.9 g (wet)

**Hong Van Commune
 Human Blood (wet weight)
 Females <25**

INSTRUMENT GC-HRMS

% LIPID: 0.3

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.006 | T4CDF - Total | ND | 0.008 |
| 2,3,7,8 | ND | 0.006 | 2,3,7,8 | ND | 0.008 |
| P5CDD - Total | ND | 0.005 | P5CDF - Total | ND | 0.005 |
| 1,2,3,7,8 | ND | 0.005 | 1,2,3,7,8 | ND | 0.005 |
| | | | 2,3,4,7,8 | NDR(0.006) | 0.005 |
| H6CDD - Total | ND | 0.005 | H6CDF - Total | 0.024 | 0.009 |
| 1,2,3,4,7,8 | ND | 0.005 | 1,2,3,4,7,8 | 0.024 | 0.009 |
| 1,2,3,6,7,8 | NDR(0.010) | 0.005 | 1,2,3,6,7,8 | NDR(0.015) | 0.009 |
| 1,2,3,7,8,9 | NDR(0.007) | 0.005 | 2,3,4,6,7,8 | ND | 0.009 |
| | | | 1,2,3,7,8,9 | ND | 0.009 |
| H7CDD - Total | ND | 0.006 | H7CDF - Total | ND | 0.013 |
| 1,2,3,4,6,7,8 | NDR(0.042) | 0.006 | 1,2,3,4,6,7,8 | NDR(0.075) | 0.013 |
| | | | 1,2,3,4,7,8,9 | ND | 0.013 |
| O8CDD | 0.25 | 0.007 | O8CDF | 0.010 | 0.009 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 72 |
| 13C-T4CDD | 76 |
| 13C-P5CDF | 78 |
| 13C-P5CDD | 78 |
| 13C-H6CDF | 77 |
| 13C-H6CDD | 75 |
| 13C-H7CDF | 56 |
| 13C-H7CDD | 51 |
| 13C-O8CDD | 57 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.0109 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.0027 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved



ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: **COMP.#5**

AXYS FILE: **L1935-5 L**

CLIENT: **Hatfield Consultants Ltd.**

DATE: **28-Oct-1999**

CLIENT NO.: **2607**

SAMPLE TYPE: **Blood**

METHOD NO.: **DX-B-06/Ver.1**

SAMPLE SIZE: **0.142 g lipid**

**Hong Van Commune
 Human Blood (lipid basis)
 Females <25**

INSTRUMENT: **GC-HRMS**

% LIPID: **0.3**

CONCENTRATION IN: **pg/g**

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | ND | 1.9 | T4CDF - Total | ND | 2.6 |
| 2,3,7,8 | ND | 1.9 | 2,3,7,8 | ND | 2.6 |
| P5CDD - Total | ND | 1.6 | P5CDF - Total | ND | 1.6 |
| 1,2,3,7,8 | ND | 1.6 | 1,2,3,7,8 | ND | 1.6 |
| | | | 2,3,4,7,8 | NDR(1.9) | 1.6 |
| H6CDD - Total | ND | 1.6 | H6CDF - Total | 7.7 | 2.9 |
| 1,2,3,4,7,8 | ND | 1.6 | 1,2,3,4,7,8 | 7.7 | 2.9 |
| 1,2,3,6,7,8 | NDR(3.2) | 1.6 | 1,2,3,6,7,8 | NDR(4.8) | 2.9 |
| 1,2,3,7,8,9 | NDR(2.3) | 1.6 | 2,3,4,6,7,8 | ND | 2.9 |
| | | | 1,2,3,7,8,9 | ND | 2.9 |
| H7CDD - Total | ND | 1.9 | H7CDF - Total | ND | 4.2 |
| 1,2,3,4,6,7,8 | NDR(14) | 1.9 | 1,2,3,4,6,7,8 | NDR(24) | 4.2 |
| | | | 1,2,3,4,7,8,9 | ND | 4.2 |
| O8CDD | 82 | 2.3 | O8CDF | 3.2 | 2.9 |

Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 72 |
| 13C-T4CDD | 76 |
| 13C-P5CDF | 78 |
| 13C-P5CDD | 78 |
| 13C-H6CDF | 77 |
| 13C-H6CDD | 75 |
| 13C-H7CDF | 56 |
| 13C-H7CDD | 51 |
| 13C-O8CDD | 57 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 3.53 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.86 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP.#6

AXYS FILE: L1935-6 L

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Oct-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blood

METHOD NO.: DX-B-06/Ver. 1

SAMPLE SIZE: 31.9 g (wet)

**Hong Van Commune
 Human Blood (wet weight)
 Females >25**

INSTRUMENT GC-HRMS

% LIPID: 0.3

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.012 | T4CDF - Total | ND | 0.013 |
| 2,3,7,8 | ND | 0.012 | 2,3,7,8 | ND | 0.013 |
| P5CDD - Total | ND | 0.005 | P5CDF - Total | ND | 0.005 |
| 1,2,3,7,8 | ND | 0.005 | 1,2,3,7,8 | ND | 0.005 |
| | | | 2,3,4,7,8 | NDR(0.006) | 0.005 |
| H6CDD - Total | ND | 0.009 | H6CDF - Total | 0.028 | 0.012 |
| 1,2,3,4,7,8 | ND | 0.009 | 1,2,3,4,7,8 | 0.028 | 0.012 |
| 1,2,3,6,7,8 | NDR(0.014) | 0.009 | 1,2,3,6,7,8 | NDR(0.016) | 0.012 |
| 1,2,3,7,8,9 | NDR(0.010) | 0.009 | 2,3,4,6,7,8 | ND | 0.012 |
| | | | 1,2,3,7,8,9 | ND | 0.012 |
| H7CDD - Total | 0.041 | 0.010 | H7CDF - Total | 0.063 | 0.014 |
| 1,2,3,4,6,7,8 | 0.041 | 0.010 | 1,2,3,4,6,7,8 | 0.063 | 0.014 |
| | | | 1,2,3,4,7,8,9 | ND | 0.014 |
| O8CDD | 0.33 | 0.027 | O8CDF | ND | 0.015 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 67 |
| 13C-T4CDD | 76 |
| 13C-P5CDF | 78 |
| 13C-P5CDD | 82 |
| 13C-H6CDF | 76 |
| 13C-H6CDD | 78 |
| 13C-H7CDF | 55 |
| 13C-H7CDD | 56 |
| 13C-O8CDD | 53 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.0167 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.0042 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001A

| | | | |
|----------------------------|----------------------------------|--|----------------------|
| CLIENT SAMPLE I.D.: | COMP.#6 | AXYS FILE: | L1935-6 L |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 28-Oct-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-B-06/Ver.1 |
| SAMPLE TYPE: | Blood | INSTRUMENT: | GC-HRMS |
| SAMPLE SIZE: | 0.089 g lipid | Hong Van Commune Human Blood (lipid basis) Females >25 | |
| % LIPID: | 0.3 | CONCENTRATION IN: | pg/g |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | ND | 4.3 | T4CDF - Total | ND | 4.6 |
| 2,3,7,8 | ND | 4.3 | 2,3,7,8 | ND | 4.6 |
| P5CDD - Total | ND | 1.8 | P5CDF - Total | ND | 1.8 |
| 1,2,3,7,8 | ND | 1.8 | 1,2,3,7,8 | ND | 1.8 |
| | | | 2,3,4,7,8 | NDR(2.1) | 1.8 |
| H6CDD - Total | ND | 3.2 | H6CDF - Total | 10 | 4.3 |
| 1,2,3,4,7,8 | ND | 3.2 | 1,2,3,4,7,8 | 10 | 4.3 |
| 1,2,3,6,7,8 | NDR(5.0) | 3.2 | 1,2,3,6,7,8 | NDR(5.7) | 4.3 |
| 1,2,3,7,8,9 | NDR(3.6) | 3.2 | 2,3,4,6,7,8 | ND | 4.3 |
| | | | 1,2,3,7,8,9 | ND | 4.3 |
| H7CDD - Total | 15 | 3.6 | H7CDF - Total | 23 | 5.0 |
| 1,2,3,4,6,7,8 | 15 | 3.6 | 1,2,3,4,6,7,8 | 23 | 5.0 |
| | | | 1,2,3,4,7,8,9 | ND | 5.0 |
| O8CDD | 120 | 9.6 | O8CDF | ND | 5.4 |

Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 67 |
| 13C-T4CDD | 76 |
| 13C-P5CDF | 78 |
| 13C-P5CDD | 82 |
| 13C-H6CDF | 76 |
| 13C-H6CDD | 78 |
| 13C-H7CDF | 55 |
| 13C-H7CDD | 56 |
| 13C-O8CDD | 53 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 5.95 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 1.49 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001A

CLIENT SAMPLE I.D.: COMP.#7

AXYS FILE: L1935-7 L

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Oct-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blood

METHOD NO.: DX-B-06/Ver. 1

SAMPLE SIZE: 42.9 g (wet)

**Hong Van Commune
Human Blood (wet weight)
Males <25**

INSTRUMENT GC-HRMS

% LIPID: 0.3

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|--|--------------------------------------|----------------------------------|---|-------------------------------------|---|
| T4CDD - Total 2,3,7,8 | ND NDR(0.011) | 0.009 0.009 | T4CDF - Total 2,3,7,8 | ND ND | 0.006 0.006 |
| P5CDD - Total 1,2,3,7,8 | 0.007 NDR(0.008) | 0.005 0.005 | P5CDF - Total 1,2,3,7,8 2,3,4,7,8 | ND ND NDR(0.008) | 0.005 0.005 0.005 |
| H6CDD - Total 1,2,3,4,7,8 1,2,3,6,7,8 1,2,3,7,8,9 | ND ND NDR(0.020) NDR(0.014) | 0.007 0.007 0.007 0.007 | H6CDF - Total 1,2,3,4,7,8 1,2,3,6,7,8 2,3,4,6,7,8 1,2,3,7,8,9 | 0.086 0.054 0.032 ND ND | 0.007 0.007 0.007 0.007 0.007 |
| H7CDD - Total 1,2,3,4,6,7,8 | 0.043 0.043 | 0.009 0.009 | H7CDF - Total 1,2,3,4,6,7,8 1,2,3,4,7,8,9 | 0.14 0.14 ND | 0.013 0.013 0.013 |
| O8CDD | 0.28 | 0.007 | O8CDF | NDR(0.014) | 0.009 |


Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 81 |
| 13C-T4CDD | 89 |
| 13C-P5CDF | 94 |
| 13C-P5CDD | 98 |
| 13C-H6CDF | 80 |
| 13C-H6CDD | 81 |
| 13C-H7CDF | 60 |
| 13C-H7CDD | 59 |
| 13C-O8CDD | 60 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.0199 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.0107 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP.#7

AXYS FILE: L1935-7 L

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Oct-1999

CLIENT NO.: 2607

REVISED DATE: 20-Jan-2000

SAMPLE TYPE: Blood

METHOD NO.: DX-B-06/Ver.1

SAMPLE SIZE: 0.112 g lipid

**Hong Van Commune
Human Blood (lipid basis)
Males <25**

INSTRUMENT: GC-HRMS

% LIPID: 0.3

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 3.5 | T4CDF - Total | ND | 2.3 |
| 2,3,7,8 | NDR(4.2) | 3.5 | 2,3,7,8 | ND | 2.3 |
| P5CDD - Total | 2.7 | 1.9 | P5CDF - Total | ND | 1.9 |
| 1,2,3,7,8 | NDR(3.1) | 1.9 | 1,2,3,7,8 | ND | 1.9 |
| | | | 2,3,4,7,8 | NDR(3.1) | 1.9 |
| H6CDD - Total | ND | 2.7 | H6CDF - Total | 33 | 2.7 |
| 1,2,3,4,7,8 | ND | 2.7 | 1,2,3,4,7,8 | 21 | 2.7 |
| 1,2,3,6,7,8 | NDR(7.7) | 2.7 | 1,2,3,6,7,8 | 12 | 2.7 |
| 1,2,3,7,8,9 | NDR(5.4) | 2.7 | 2,3,4,6,7,8 | ND | 2.7 |
| | | | 1,2,3,7,8,9 | ND | 2.7 |
| H7CDD - Total | 17 | 3.5 | H7CDF - Total | 54 | 5.0 |
| 1,2,3,4,6,7,8 | 17 | 3.5 | 1,2,3,4,6,7,8 | 54 | 5.0 |
| | | | 1,2,3,4,7,8,9 | ND | 5.0 |
| O8CDD | 110 | 2.7 | O8CDF | NDR(5.4) | 3.5 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 81 |
| 13C-T4CDD | 89 |
| 13C-P5CDF | 94 |
| 13C-P5CDD | 98 |
| 13C-H6CDF | 80 |
| 13C-H6CDD | 81 |
| 13C-H7CDF | 60 |
| 13C-H7CDD | 59 |
| 13C-O8CDD | 60 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 7.67 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 4.12 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP.#8

AXYS FILE: L1935-8 L

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Oct-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blood

METHOD NO.: DX-B-06/Ver. 1

SAMPLE SIZE: 40.5 g (wet)

**Hong Van Commune
 Human Blood (wet weight)
 Males >25**

INSTRUMENT GC-HRMS

% LIPID: 0.4

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.017 | T4CDF - Total | ND | 0.008 |
| 2,3,7,8 | ND | 0.017 | 2,3,7,8 | ND | 0.008 |
| P5CDD - Total | ND | 0.005 | P5CDF - Total | ND | 0.005 |
| 1,2,3,7,8 | NDR(0.011) | 0.005 | 1,2,3,7,8 | ND | 0.005 |
| | | | 2,3,4,7,8 | ND | 0.005 |
| H6CDD - Total | 0.020 | 0.005 | H6CDF - Total | 0.067 | 0.008 |
| 1,2,3,4,7,8 | ND | 0.005 | 1,2,3,4,7,8 | 0.040 | 0.008 |
| 1,2,3,6,7,8 | 0.020 | 0.005 | 1,2,3,6,7,8 | 0.027 | 0.008 |
| 1,2,3,7,8,9 | NDR(0.005) | 0.005 | 2,3,4,6,7,8 | ND | 0.008 |
| | | | 1,2,3,7,8,9 | ND | 0.008 |
| H7CDD - Total | 0.046 | 0.005 | H7CDF - Total | 0.11 | 0.011 |
| 1,2,3,4,6,7,8 | 0.046 | 0.005 | 1,2,3,4,6,7,8 | 0.086 | 0.011 |
| | | | 1,2,3,4,7,8,9 | ND | 0.011 |
| O8CDD | 0.36 | 0.008 | O8CDF | 0.011 | 0.009 |

Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 74 |
| 13C-T4CDD | 81 |
| 13C-P5CDF | 92 |
| 13C-P5CDD | 100 |
| 13C-H6CDF | 83 |
| 13C-H6CDD | 120 |
| 13C-H7CDF | 61 |
| 13C-H7CDD | 62 |
| 13C-O8CDD | 67 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.0233 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.0104 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved



ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP.#8

AXYS FILE: L1935-8 L

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Oct-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blood

METHOD NO.: DX-B-06/Ver.1

SAMPLE SIZE: 0.174 g lipid

**Hong Van Commune
 Human Blood (lipid basis)
 Males >25**

INSTRUMENT: GC-HRMS

% LIPID: 0.4

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 4.0 | T4CDF - Total | ND | 1.9 |
| 2,3,7,8 | ND | 4.0 | 2,3,7,8 | ND | 1.9 |
| P5CDD - Total | ND | 1.2 | P5CDF - Total | ND | 1.2 |
| 1,2,3,7,8 | NDR(2.6) | 1.2 | 1,2,3,7,8 | ND | 1.2 |
| | | | 2,3,4,7,8 | ND | 1.2 |
| H6CDD - Total | 4.7 | 1.2 | H6CDF - Total | 16 | 1.9 |
| 1,2,3,4,7,8 | ND | 1.2 | 1,2,3,4,7,8 | 9.3 | 1.9 |
| 1,2,3,6,7,8 | 4.7 | 1.2 | 1,2,3,6,7,8 | 6.3 | 1.9 |
| 1,2,3,7,8,9 | NDR(1.2) | 1.2 | 2,3,4,6,7,8 | ND | 1.9 |
| | | | 1,2,3,7,8,9 | ND | 1.9 |
| H7CDD - Total | 11 | 1.2 | H7CDF - Total | 25 | 2.6 |
| 1,2,3,4,6,7,8 | 11 | 1.2 | 1,2,3,4,6,7,8 | 20 | 2.6 |
| | | | 1,2,3,4,7,8,9 | ND | 2.6 |
| O8CDD | 83 | 1.9 | O8CDF | 2.6 | 2.1 |

Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 74 |
| 13C-T4CDD | 81 |
| 13C-P5CDF | 92 |
| 13C-P5CDD | 100 |
| 13C-H6CDF | 83 |
| 13C-H6CDD | 120 |
| 13C-H7CDF | 61 |
| 13C-H7CDD | 62 |
| 13C-O8CDD | 67 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 5.41 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 2.42 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP.#9

AXYS FILE: L1935-9 L

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Oct-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blood

METHOD NO.: DX-B-06/Ver. 1

SAMPLE SIZE: 25.7 g (wet)

**Huong Lam Commune
 Human Blood (wet weight)
 Females <25**

INSTRUMENT GC-HRMS

% LIPID: 0.2

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.022 | T4CDF - Total | ND | 0.016 |
| 2,3,7,8 | ND | 0.022 | 2,3,7,8 | ND | 0.016 |
| P5CDD - Total | ND | 0.005 | P5CDF - Total | ND | 0.005 |
| 1,2,3,7,8 | ND | 0.005 | 1,2,3,7,8 | ND | 0.005 |
| | | | 2,3,4,7,8 | NDR(0.016) | 0.005 |
| H6CDD - Total | 0.009 | 0.005 | H6CDF - Total | 0.054 | 0.012 |
| 1,2,3,4,7,8 | ND | 0.005 | 1,2,3,4,7,8 | NDR(0.076) | 0.012 |
| 1,2,3,6,7,8 | NDR(0.021) | 0.005 | 1,2,3,6,7,8 | 0.042 | 0.012 |
| 1,2,3,7,8,9 | ND | 0.005 | 2,3,4,6,7,8 | ND | 0.012 |
| | | | 1,2,3,7,8,9 | ND | 0.012 |
| H7CDD - Total | ND | 0.018 | H7CDF - Total | ND | 0.027 |
| 1,2,3,4,6,7,8 | NDR(0.073) | 0.018 | 1,2,3,4,6,7,8 | 0.23 | 0.027 |
| | | | 1,2,3,4,7,8,9 | ND | 0.027 |
| O8CDD | 0.27 | 0.046 | O8CDF | ND | 0.039 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 58 |
| 13C-T4CDD | 61 |
| 13C-P5CDF | 58 |
| 13C-P5CDD | 60 |
| 13C-H6CDF | 66 |
| 13C-H6CDD | 69 |
| 13C-H7CDF | 39 |
| 13C-H7CDD | 38 |
| 13C-O8CDD | 33 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.0240 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.0068 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved



ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP.#9

AXYS FILE: L1935-9 L

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Oct-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blood

METHOD NO.: DX-B-06/Ver.1

SAMPLE SIZE: 0.062 g lipid

**Huong Lam Commune
 Human Blood (lipid basis)
 Females <25**

INSTRUMENT: GC-HRMS

% LIPID: 0.2

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 9.2 | T4CDF - Total | ND | 6.7 |
| 2,3,7,8 | ND | 9.2 | 2,3,7,8 | ND | 6.7 |
| P5CDD - Total | ND | 2.1 | P5CDF - Total | ND | 2.1 |
| 1,2,3,7,8 | ND | 2.1 | 1,2,3,7,8 | ND | 2.1 |
| | | | 2,3,4,7,8 | NDR(6.7) | 2.1 |
| H6CDD - Total | 3.8 | 2.1 | H6CDF - Total | 23 | 5.0 |
| 1,2,3,4,7,8 | ND | 2.1 | 1,2,3,4,7,8 | NDR(32) | 5.0 |
| 1,2,3,6,7,8 | NDR(8.8) | 2.1 | 1,2,3,6,7,8 | 18 | 5.0 |
| 1,2,3,7,8,9 | ND | 2.1 | 2,3,4,6,7,8 | ND | 5.0 |
| | | | 1,2,3,7,8,9 | ND | 5.0 |
| H7CDD - Total | ND | 7.5 | H7CDF - Total | ND | 11 |
| 1,2,3,4,6,7,8 | NDR(30) | 7.5 | 1,2,3,4,6,7,8 | 96 | 11 |
| | | | 1,2,3,4,7,8,9 | ND | 11 |
| O8CDD | 110 | 19 | O8CDF | ND | 16 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 58 |
| 13C-T4CDD | 61 |
| 13C-P5CDF | 58 |
| 13C-P5CDD | 60 |
| 13C-H6CDF | 66 |
| 13C-H6CDD | 69 |
| 13C-H7CDF | 39 |
| 13C-H7CDD | 38 |
| 13C-O8CDD | 33 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 10.0 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 2.82 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001A

CLIENT SAMPLE I.D.: COMP. #10

AXYS FILE: L1935-10 L

CLIENT: Hatfield Consultants Ltd.
CLIENT NO.: 2607
SAMPLE TYPE: Blood

DATE: 02/Nov/1999
REVISED: 20-Jan-2000
METHOD NO.: DX-B-06/Ver.1

SAMPLE SIZE: 30.4 g wet

**Huong Lam Commune
Human Blood (wet weight)
Females >25**

INSTRUMENT: GC-HRMS

% LIPID: 0.3

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.018 | 0.013 | T4CDF - Total | ND | 0.010 |
| 2,3,7,8 | 0.018 | 0.013 | 2,3,7,8 | ND | 0.010 |
| P5CDD - Total | 0.010 | 0.008 | P5CDF - Total | 0.080 | 0.010 |
| 1,2,3,7,8 | 0.010 | 0.008 | 1,2,3,7,8 | ND | 0.010 |
| | | | 2,3,4,7,8 | 0.019 | 0.010 |
| H6CDD - Total | 0.085 | 0.007 | H6CDF - Total | 0.30 | 0.005 |
| 1,2,3,4,7,8 | NDR(0.014) | 0.007 | 1,2,3,4,7,8 | 0.17 | 0.005 |
| 1,2,3,6,7,8 | 0.045 | 0.007 | 1,2,3,6,7,8 | 0.10 | 0.005 |
| 1,2,3,7,8,9 | 0.024 | 0.007 | 2,3,4,6,7,8 | 0.013 | 0.005 |
| | | | 1,2,3,7,8,9 | NDR(0.008) | 0.005 |
| H7CDD - Total | 0.17 | 0.005 | H7CDF - Total | 0.43 | 0.006 |
| 1,2,3,4,6,7,8 | 0.13 | 0.005 | 1,2,3,4,6,7,8 | 0.38 | 0.006 |
| | | | 1,2,3,4,7,8,9 | 0.046 | 0.006 |
| O8CDD | 0.45 | 0.010 | O8CDF | NDR(0.045) | 0.009 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 74 |
| 13C-T4CDD | 76 |
| 13C-P5CDF | 76 |
| 13C-P5CDD | 72 |
| 13C-H6CDF | 74 |
| 13C-H6CDD | 74 |
| 13C-H7CDF | 59 |
| 13C-H7CDD | 63 |
| 13C-O8CDD | 54 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|--------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.0747 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.0733 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001A

CLIENT SAMPLE I.D.: **COMP. #10**

AXYS FILE: **L1935-10 L**

CLIENT: **Hatfield Consultants Ltd.**

DATE: **02-Nov-1999**

CLIENT NO.: **2607**

REVISED: **20-Jan-2000**

SAMPLE TYPE: **Blood**

METHOD NO.: **DX-B-06/Ver.1**

SAMPLE SIZE: **0.103 g lipid**

**Huong Lam Commune
Human Blood (lipid basis)
Females >25**

INSTRUMENT: **GC-HRMS**

% LIPID: **0.3**

CONCENTRATION IN: **pg/g**

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 5.3 | 3.8 | T4CDF - Total | ND | 2.9 |
| 2,3,7,8 | 5.3 | 3.8 | 2,3,7,8 | ND | 2.9 |
| P5CDD - Total | 2.9 | 2.4 | P5CDF - Total | 24 | 2.9 |
| 1,2,3,7,8 | 2.9 | 2.4 | 1,2,3,7,8 | ND | 2.9 |
| | | | 2,3,4,7,8 | 5.6 | 2.9 |
| H6CDD - Total | 25 | 2.1 | H6CDF - Total | 89 | 1.5 |
| 1,2,3,4,7,8 | NDR(4.1) | 2.1 | 1,2,3,4,7,8 | 49 | 1.5 |
| 1,2,3,6,7,8 | 13 | 2.1 | 1,2,3,6,7,8 | 29 | 1.5 |
| 1,2,3,7,8,9 | 7.1 | 2.1 | 2,3,4,6,7,8 | 3.8 | 1.5 |
| | | | 1,2,3,7,8,9 | NDR(2.4) | 1.5 |
| H7CDD - Total | 49 | 1.5 | H7CDF - Total | 130 | 1.8 |
| 1,2,3,4,6,7,8 | 39 | 1.5 | 1,2,3,4,6,7,8 | 110 | 1.8 |
| | | | 1,2,3,4,7,8,9 | 14 | 1.8 |
| O8CDD | 130 | 2.9 | O8CDF | NDR(13) | 2.6 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 74 |
| 13C-T4CDD | 76 |
| 13C-P5CDF | 76 |
| 13C-P5CDD | 72 |
| 13C-H6CDF | 74 |
| 13C-H6CDD | 74 |
| 13C-H7CDF | 59 |
| 13C-H7CDD | 63 |
| 13C-O8CDD | 54 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 22.0 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 21.6 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP.#11

AXYS FILE: L1935-11

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Oct-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blood

METHOD NO.: DX-B-06/Ver.1

SAMPLE SIZE: 38.6 g wet

**Huong Lam Commune
 Human Blood (wet weight)
 Males <25**

INSTRUMENT: GC-HRMS

% LIPID: 0.3

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 0.028 | 0.005 | T4CDF - Total | ND | 0.005 |
| 2,3,7,8 | 0.028 | 0.005 | 2,3,7,8 | ND | 0.005 |
| P5CDD - Total | 0.012 | 0.005 | P5CDF - Total | 0.017 | 0.005 |
| 1,2,3,7,8 | 0.012 | 0.005 | 1,2,3,7,8 | ND | 0.005 |
| | | | 2,3,4,7,8 | 0.017 | 0.005 |
| H6CDD - Total | 0.041 | 0.005 | H6CDF - Total | 0.11 | 0.006 |
| 1,2,3,4,7,8 | NDR(0.008) | 0.005 | 1,2,3,4,7,8 | 0.072 | 0.006 |
| 1,2,3,6,7,8 | 0.030 | 0.005 | 1,2,3,6,7,8 | 0.040 | 0.006 |
| 1,2,3,7,8,9 | 0.011 | 0.005 | 2,3,4,6,7,8 | ND | 0.006 |
| | | | 1,2,3,7,8,9 | ND | 0.006 |
| H7CDD - Total | 0.065 | 0.007 | H7CDF - Total | 0.15 | 0.019 |
| 1,2,3,4,6,7,8 | 0.052 | 0.007 | 1,2,3,4,6,7,8 | 0.15 | 0.019 |
| | | | 1,2,3,4,7,8,9 | ND | 0.019 |
| O8CDD | 0.23 | 0.008 | O8CDF | 0.020 | 0.015 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 86 |
| 13C-T4CDD | 92 |
| 13C-P5CDF | 79 |
| 13C-P5CDD | 83 |
| 13C-H6CDF | 88 |
| 13C-H6CDD | 94 |
| 13C-H7CDF | 65 |
| 13C-H7CDD | 69 |
| 13C-O8CDD | 53 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

2,3,7,8 - TCDD TEQs (ND=1/2 DL) = 0.0614 pg/g
 2,3,7,8 - TCDD TEQs (ND=0) = 0.06 pg/g

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

| | | | |
|----------------------------|----------------------------------|----------------------------------|----------------------|
| CLIENT SAMPLE I.D.: | COMP.#11 | AXYS FILE: | L1935-11 |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 28-Oct-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-B-06/Ver.1 |
| SAMPLE TYPE: | Blood | INSTRUMENT: | GC-HRMS |
| SAMPLE SIZE: | 0.120 g lipid | Huong Lam Commune | |
| | | Human Blood (lipid basis) | |
| % LIPID: | 0.3 | Males <25 | |
| | | CONCENTRATION IN: | pg/g |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 9.0 | 1.6 | T4CDF - Total | ND | 1.6 |
| 2,3,7,8 | 9.0 | 1.6 | 2,3,7,8 | ND | 1.6 |
| P5CDD - Total | 3.9 | 1.6 | P5CDF - Total | 5.5 | 1.6 |
| 1,2,3,7,8 | 3.9 | 1.6 | 1,2,3,7,8 | ND | 1.6 |
| | | | 2,3,4,7,8 | 5.5 | 1.6 |
| H6CDD - Total | 13 | 1.6 | H6CDF - Total | 36 | 1.9 |
| 1,2,3,4,7,8 | NDR(2.6) | 1.6 | 1,2,3,4,7,8 | 23 | 1.9 |
| 1,2,3,6,7,8 | 9.7 | 1.6 | 1,2,3,6,7,8 | 13 | 1.9 |
| 1,2,3,7,8,9 | 3.5 | 1.6 | 2,3,4,6,7,8 | ND | 1.9 |
| | | | 1,2,3,7,8,9 | ND | 1.9 |
| H7CDD - Total | 21 | 2.3 | H7CDF - Total | 47 | 6.1 |
| 1,2,3,4,6,7,8 | 17 | 2.3 | 1,2,3,4,6,7,8 | 47 | 6.1 |
| | | | 1,2,3,4,7,8,9 | ND | 6.1 |
| O8CDD | 74 | 2.6 | O8CDF | 6.5 | 4.8 |

Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 86 |
| 13C-T4CDD | 92 |
| 13C-P5CDF | 79 |
| 13C-P5CDD | 83 |
| 13C-H6CDF | 88 |
| 13C-H6CDD | 94 |
| 13C-H7CDF | 65 |
| 13C-H7CDD | 69 |
| 13C-O8CDD | 53 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

2,3,7,8 - TCDD TEQs (ND=1/2 DL) = 19.8 pg/g
2,3,7,8 - TCDD TEQs (ND=0) = 19.4 pg/g

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP.#12

AXYS FILE: L1935-12

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Oct-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blood

METHOD NO.: DX-B-06/Ver.1

SAMPLE SIZE: 34.7 g wet

**Huong Lam Commune
 Human Blood (wet weight)
 Males >25**

INSTRUMENT: GC-HRMS

% LIPID: 0.2

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.039 | 0.005 | T4CDF - Total | ND | 0.005 |
| 2,3,7,8 | 0.039 | 0.005 | 2,3,7,8 | ND | 0.005 |
| P5CDD - Total | ND | 0.005 | P5CDF - Total | ND | 0.005 |
| 1,2,3,7,8 | NDR(0.011) | 0.005 | 1,2,3,7,8 | NDR(0.005) | 0.005 |
| | | | 2,3,4,7,8 | NDR(0.021) | 0.005 |
| H6CDD - Total | 0.016 | 0.006 | H6CDF - Total | 0.13 | 0.005 |
| 1,2,3,4,7,8 | 0.009 | 0.006 | 1,2,3,4,7,8 | 0.082 | 0.005 |
| 1,2,3,6,7,8 | NDR(0.036) | 0.006 | 1,2,3,6,7,8 | 0.044 | 0.005 |
| 1,2,3,7,8,9 | NDR(0.016) | 0.006 | 2,3,4,6,7,8 | ND | 0.005 |
| | | | 1,2,3,7,8,9 | ND | 0.005 |
| H7CDD - Total | 0.083 | 0.007 | H7CDF - Total | 0.15 | 0.011 |
| 1,2,3,4,6,7,8 | 0.062 | 0.007 | 1,2,3,4,6,7,8 | 0.15 | 0.011 |
| | | | 1,2,3,4,7,8,9 | NDR(0.022) | 0.011 |
| O8CDD | 0.28 | 0.010 | O8CDF | 0.015 | 0.012 |


Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 85 |
| 13C-T4CDD | 87 |
| 13C-P5CDF | 85 |
| 13C-P5CDD | 88 |
| 13C-H6CDF | 81 |
| 13C-H6CDD | 79 |
| 13C-H7CDF | 64 |
| 13C-H7CDD | 68 |
| 13C-O8CDD | 62 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.0589 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.0549 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP.#12

AXYS FILE: L1935-12

CLIENT: Hatfield Consultants Ltd.
 CLIENT NO.: 2607
 SAMPLE TYPE: Blood

DATE: 28-Oct-1999
 REVISED: 20-Jan-2000
 METHOD NO.: DX-B-06/Ver.1

SAMPLE SIZE: 0.080 g lipid

**Huong Lam Commune
 Human Blood (lipid basis)
 Males >25**

INSTRUMENT: GC-HRMS

% LIPID: 0.2

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 17 | 2.2 | T4CDF - Total | ND | 2.2 |
| 2,3,7,8 | 17 | 2.2 | 2,3,7,8 | ND | 2.2 |
| P5CDD - Total | ND | 2.2 | P5CDF - Total | ND | 2.2 |
| 1,2,3,7,8 | NDR(4.8) | 2.2 | 1,2,3,7,8 | NDR(2.2) | 2.2 |
| | | | 2,3,4,7,8 | NDR(9.1) | 2.2 |
| H6CDD - Total | 7.0 | 2.6 | H6CDF - Total | 55 | 2.2 |
| 1,2,3,4,7,8 | 3.9 | 2.6 | 1,2,3,4,7,8 | 36 | 2.2 |
| 1,2,3,6,7,8 | NDR(16) | 2.6 | 1,2,3,6,7,8 | 19 | 2.2 |
| 1,2,3,7,8,9 | NDR(7.0) | 2.6 | 2,3,4,6,7,8 | ND | 2.2 |
| | | | 1,2,3,7,8,9 | ND | 2.2 |
| H7CDD - Total | 36 | 3.0 | H7CDF - Total | 65 | 4.8 |
| 1,2,3,4,6,7,8 | 27 | 3.0 | 1,2,3,4,6,7,8 | 65 | 4.8 |
| | | | 1,2,3,4,7,8,9 | NDR(9.6) | 4.8 |
| O8CDD | 120 | 4.3 | O8CDF | 6.5 | 5.2 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 85 |
| 13C-T4CDD | 87 |
| 13C-P5CDF | 85 |
| 13C-P5CDD | 88 |
| 13C-H6CDF | 81 |
| 13C-H6CDD | 79 |
| 13C-H7CDF | 64 |
| 13C-H7CDD | 68 |
| 13C-O8CDD | 62 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 25.6 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 23.9 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP. #13

AXYS FILE: L1935-13 L

CLIENT: Hatfield Consultants Ltd.

DATE: 02-Nov-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blood

METHOD NO.: DX-B-06/Ver.1

SAMPLE SIZE: 28.2 g wet

**Hong Thuong Commune
 Human Blood (wet weight)
 Females <25**

INSTRUMENT: GC-HRMS

% LIPID: 0.3

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.022 | 0.011 | T4CDF - Total | ND | 0.010 |
| 2,3,7,8 | 0.022 | 0.011 | 2,3,7,8 | NDR(0.011) | 0.010 |
| P5CDD - Total | ND | 0.008 | P5CDF - Total | ND | 0.007 |
| 1,2,3,7,8 | NDR(0.011) | 0.008 | 1,2,3,7,8 | ND | 0.007 |
| | | | 2,3,4,7,8 | ND | 0.007 |
| H6CDD - Total | 0.015 | 0.008 | H6CDF - Total | 0.029 | 0.006 |
| 1,2,3,4,7,8 | ND | 0.008 | 1,2,3,4,7,8 | NDR(0.035) | 0.006 |
| 1,2,3,6,7,8 | 0.015 | 0.008 | 1,2,3,6,7,8 | 0.022 | 0.006 |
| 1,2,3,7,8,9 | ND | 0.008 | 2,3,4,6,7,8 | ND | 0.006 |
| | | | 1,2,3,7,8,9 | ND | 0.006 |
| H7CDD - Total | 0.075 | 0.005 | H7CDF - Total | 0.062 | 0.008 |
| 1,2,3,4,6,7,8 | 0.050 | 0.005 | 1,2,3,4,6,7,8 | 0.062 | 0.008 |
| | | | 1,2,3,4,7,8,9 | ND | 0.008 |
| O8CDD | 0.25 | 0.006 | O8CDF | 0.012 | 0.006 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 72 |
| 13C-T4CDD | 72 |
| 13C-P5CDF | 78 |
| 13C-P5CDD | 77 |
| 13C-H6CDF | 84 |
| 13C-H6CDD | 82 |
| 13C-H7CDF | 76 |
| 13C-H7CDD | 75 |
| 13C-O8CDD | 76 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.0332 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.0271 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

| | | | |
|----------------------------|----------------------------------|----------------------------------|----------------------|
| CLIENT SAMPLE I.D.: | COMP. #13 | AXYS FILE: | L1935-13 L |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 02-Nov-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-B-06/Ver.1 |
| SAMPLE TYPE: | Blood | INSTRUMENT: | GC-HRMS |
| SAMPLE SIZE: | 0.081 g lipid | Hong Thuong Commune | |
| % LIPID: | 0.3 | Human Blood (lipid basis) | |
| | | Females <25 | |
| | | CONCENTRATION IN: pg/g | |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | 7.6 | 3.8 | T4CDF - Total | ND | 3.4 |
| 2,3,7,8 | 7.6 | 3.8 | 2,3,7,8 | NDR(3.8) | 3.4 |
| P5CDD - Total | ND | 2.8 | P5CDF - Total | ND | 2.4 |
| 1,2,3,7,8 | NDR(3.8) | 2.8 | 1,2,3,7,8 | ND | 2.4 |
| | | | 2,3,4,7,8 | ND | 2.4 |
| H6CDD - Total | 5.2 | 2.8 | H6CDF - Total | 10 | 2.1 |
| 1,2,3,4,7,8 | ND | 2.8 | 1,2,3,4,7,8 | NDR(12) | 2.1 |
| 1,2,3,6,7,8 | 5.2 | 2.8 | 1,2,3,6,7,8 | 7.6 | 2.1 |
| 1,2,3,7,8,9 | ND | 2.8 | 2,3,4,6,7,8 | ND | 2.1 |
| | | | 1,2,3,7,8,9 | ND | 2.1 |
| H7CDD - Total | 26 | 1.7 | H7CDF - Total | 21 | 2.8 |
| 1,2,3,4,6,7,8 | 17 | 1.7 | 1,2,3,4,6,7,8 | 21 | 2.8 |
| | | | 1,2,3,4,7,8,9 | ND | 2.8 |
| O8CDD | 87 | 2.1 | O8CDF | 4.1 | 2.1 |

Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 72 |
| 13C-T4CDD | 72 |
| 13C-P5CDF | 78 |
| 13C-P5CDD | 77 |
| 13C-H6CDF | 84 |
| 13C-H6CDD | 82 |
| 13C-H7CDF | 76 |
| 13C-H7CDD | 75 |
| 13C-O8CDD | 76 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 11.5 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 9.34 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.



Approved

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**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001A

CLIENT SAMPLE I.D.: COMP.#14

AXYS FILE: L1935-14

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Oct-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blood

METHOD NO.: DX-B-06/Ver.1

SAMPLE SIZE: 43.7 g wet

**Hong Thuong Commune
Human Blood (wet weight)
Females >25**

INSTRUMENT: GC-HRMS

% LIPID: 0.3

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.030 | 0.006 | T4CDF - Total | ND | 0.005 |
| 2,3,7,8 | 0.030 | 0.006 | 2,3,7,8 | ND | 0.005 |
| P5CDD - Total | 0.010 | 0.005 | P5CDF - Total | 0.013 | 0.005 |
| 1,2,3,7,8 | 0.010 | 0.005 | 1,2,3,7,8 | ND | 0.005 |
| | | | 2,3,4,7,8 | 0.013 | 0.005 |
| H6CDD - Total | 0.035 | 0.005 | H6CDF - Total | 0.12 | 0.005 |
| 1,2,3,4,7,8 | 0.007 | 0.005 | 1,2,3,4,7,8 | 0.078 | 0.005 |
| 1,2,3,6,7,8 | 0.028 | 0.005 | 1,2,3,6,7,8 | 0.046 | 0.005 |
| 1,2,3,7,8,9 | NDR(0.009) | 0.005 | 2,3,4,6,7,8 | ND | 0.005 |
| | | | 1,2,3,7,8,9 | ND | 0.005 |
| H7CDD - Total | 0.072 | 0.011 | H7CDF - Total | 0.19 | 0.008 |
| 1,2,3,4,6,7,8 | 0.072 | 0.011 | 1,2,3,4,6,7,8 | 0.18 | 0.008 |
| | | | 1,2,3,4,7,8,9 | 0.015 | 0.008 |
| O8CDD | 0.43 | 0.016 | O8CDF | NDR(0.014) | 0.011 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 64 |
| 13C-T4CDD | 66 |
| 13C-P5CDF | 66 |
| 13C-P5CDD | 68 |
| 13C-H6CDF | 72 |
| 13C-H6CDD | 73 |
| 13C-H7CDF | 54 |
| 13C-H7CDD | 53 |
| 13C-O8CDD | 50 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.0616 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.0605 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

| | | |
|---------------------|---------------------------|---------------------------|
| CLIENT SAMPLE I.D.: | COMP.#14 | AXYS FILE: L1935-14 |
| CLIENT: | Hatfield Consultants Ltd. | DATE: 28-Oct-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: DX-B-06/Ver.1 |
| SAMPLE TYPE: | Blood | |
| SAMPLE SIZE: | 0.109 g lipid | INSTRUMENT: GC-HRMS |
| % LIPID: | 0.3 | CONCENTRATION IN: pg/g |

**Hong Thuong Commune
Human Blood (lipid basis)
Females >25**

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 12 | 2.4 | T4CDF - Total | ND | 2.0 |
| 2,3,7,8 | 12 | 2.4 | 2,3,7,8 | ND | 2.0 |
| P5CDD - Total | 4.0 | 2.0 | P5CDF - Total | 5.2 | 2.0 |
| 1,2,3,7,8 | 4.0 | 2.0 | 1,2,3,7,8 | ND | 2.0 |
| | | | 2,3,4,7,8 | 5.2 | 2.0 |
| H6CDD - Total | 14 | 2.0 | H6CDF - Total | 50 | 2.0 |
| 1,2,3,4,7,8 | 2.8 | 2.0 | 1,2,3,4,7,8 | 31 | 2.0 |
| 1,2,3,6,7,8 | 11 | 2.0 | 1,2,3,6,7,8 | 18 | 2.0 |
| 1,2,3,7,8,9 | NDR(3.6) | 2.0 | 2,3,4,6,7,8 | ND | 2.0 |
| | | | 1,2,3,7,8,9 | ND | 2.0 |
| H7CDD - Total | 29 | 4.4 | H7CDF - Total | 77 | 3.2 |
| 1,2,3,4,6,7,8 | 29 | 4.4 | 1,2,3,4,6,7,8 | 71 | 3.2 |
| | | | 1,2,3,4,7,8,9 | 6.0 | 3.2 |
| O8CDD | 170 | 6.4 | O8CDF | NDR(5.6) | 4.4 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 64 |
| 13C-T4CDD | 66 |
| 13C-P5CDF | 66 |
| 13C-P5CDD | 68 |
| 13C-H6CDF | 72 |
| 13C-H6CDD | 73 |
| 13C-H7CDF | 54 |
| 13C-H7CDD | 53 |
| 13C-O8CDD | 50 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 24.6 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 24.2 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved _____

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP.#15

AXYS FILE: L1935-15

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Oct-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blood

METHOD NO.: DX-B-06/Ver.1

SAMPLE SIZE: 28.4 g wet

**Hong Thuong Commune
 Human Blood (wet weight)
 Males <25**

INSTRUMENT: GC-HRMS

% LIPID: 0.3

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.025 | 0.006 | T4CDF - Total | ND | 0.005 |
| 2,3,7,8 | 0.025 | 0.006 | 2,3,7,8 | ND | 0.005 |
| P5CDD - Total | ND | 0.005 | P5CDF - Total | 0.010 | 0.005 |
| 1,2,3,7,8 | NDR(0.011) | 0.005 | 1,2,3,7,8 | ND | 0.005 |
| | | | 2,3,4,7,8 | 0.010 | 0.005 |
| H6CDD - Total | 0.030 | 0.005 | H6CDF - Total | 0.076 | 0.005 |
| 1,2,3,4,7,8 | NDR(0.007) | 0.005 | 1,2,3,4,7,8 | 0.042 | 0.005 |
| 1,2,3,6,7,8 | 0.023 | 0.005 | 1,2,3,6,7,8 | 0.026 | 0.005 |
| 1,2,3,7,8,9 | NDR(0.009) | 0.005 | 2,3,4,6,7,8 | ND | 0.005 |
| | | | 1,2,3,7,8,9 | ND | 0.005 |
| H7CDD - Total | 0.13 | 0.010 | H7CDF - Total | 0.093 | 0.011 |
| 1,2,3,4,6,7,8 | 0.064 | 0.010 | 1,2,3,4,6,7,8 | 0.093 | 0.011 |
| | | | 1,2,3,4,7,8,9 | ND | 0.011 |
| O8CDD | 0.52 | 0.020 | O8CDF | ND | 0.017 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 87 |
| 13C-T4CDD | 89 |
| 13C-P5CDF | 85 |
| 13C-P5CDD | 86 |
| 13C-H6CDF | 89 |
| 13C-H6CDD | 89 |
| 13C-H7CDF | 67 |
| 13C-H7CDD | 69 |
| 13C-O8CDD | 60 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.0439 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.0412 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP.#15

AXYS FILE: L1935-15

CLIENT: Hatfield Consultants Ltd.
 CLIENT NO.: 2607
 SAMPLE TYPE: Blood

DATE: 28-Oct-1999
 METHOD NO.: DX-B-06/Ver.1

SAMPLE SIZE: 0.082 g lipid

**Hong Thuong Commune
 Human Blood (lipid basis)
 Males <25**

INSTRUMENT: GC-HRMS

% LIPID: 0.3

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 8.6 | 2.1 | T4CDF - Total | ND | 1.7 |
| 2,3,7,8 | 8.6 | 2.1 | 2,3,7,8 | ND | 1.7 |
| P5CDD - Total | ND | 1.7 | P5CDF - Total | 3.4 | 1.7 |
| 1,2,3,7,8 | NDR(3.8) | 1.7 | 1,2,3,7,8 | ND | 1.7 |
| | | | 2,3,4,7,8 | 3.4 | 1.7 |
| H6CDD - Total | 10 | 1.7 | H6CDF - Total | 26 | 1.7 |
| 1,2,3,4,7,8 | NDR(2.4) | 1.7 | 1,2,3,4,7,8 | 14 | 1.7 |
| 1,2,3,6,7,8 | 7.9 | 1.7 | 1,2,3,6,7,8 | 9.0 | 1.7 |
| 1,2,3,7,8,9 | NDR(3.1) | 1.7 | 2,3,4,6,7,8 | ND | 1.7 |
| | | | 1,2,3,7,8,9 | ND | 1.7 |
| H7CDD - Total | 44 | 3.4 | H7CDF - Total | 32 | 3.8 |
| 1,2,3,4,6,7,8 | 22 | 3.4 | 1,2,3,4,6,7,8 | 32 | 3.8 |
| | | | 1,2,3,4,7,8,9 | ND | 3.8 |
| O8CDD | 180 | 6.9 | O8CDF | ND | 5.9 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 87 |
| 13C-T4CDD | 89 |
| 13C-P5CDF | 85 |
| 13C-P5CDD | 86 |
| 13C-H6CDF | 89 |
| 13C-H6CDD | 89 |
| 13C-H7CDF | 67 |
| 13C-H7CDD | 69 |
| 13C-O8CDD | 60 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 15.1 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 14.2 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001A

CLIENT SAMPLE I.D.: COMP.#16

AXYS FILE: L1935-16

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Oct-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blood

METHOD NO.: DX-B-06/Ver.1

SAMPLE SIZE: 43.6 g wet

**Hong Thuong Commune
Human Blood (wet weight)
Males >25**

INSTRUMENT: GC-HRMS

% LIPID: 0.3

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.058 | 0.005 | T4CDF - Total | ND | 0.005 |
| 2,3,7,8 | 0.058 | 0.005 | 2,3,7,8 | ND | 0.005 |
| P5CDD - Total | 0.015 | 0.005 | P5CDF - Total | ND | 0.005 |
| 1,2,3,7,8 | 0.015 | 0.005 | 1,2,3,7,8 | ND | 0.005 |
| | | | 2,3,4,7,8 | NDR(0.018) | 0.005 |
| H6CDD - Total | 0.040 | 0.005 | H6CDF - Total | 0.13 | 0.005 |
| 1,2,3,4,7,8 | NDR(0.012) | 0.005 | 1,2,3,4,7,8 | 0.078 | 0.005 |
| 1,2,3,6,7,8 | 0.040 | 0.005 | 1,2,3,6,7,8 | 0.048 | 0.005 |
| 1,2,3,7,8,9 | NDR(0.014) | 0.005 | 2,3,4,6,7,8 | 0.005 | 0.005 |
| | | | 1,2,3,7,8,9 | ND | 0.005 |
| H7CDD - Total | 0.066 | 0.005 | H7CDF - Total | 0.14 | 0.005 |
| 1,2,3,4,6,7,8 | 0.058 | 0.005 | 1,2,3,4,6,7,8 | 0.13 | 0.005 |
| | | | 1,2,3,4,7,8,9 | 0.014 | 0.005 |
| O8CDD | 0.32 | 0.008 | O8CDF | 0.010 | 0.005 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 82 |
| 13C-T4CDD | 84 |
| 13C-P5CDF | 82 |
| 13C-P5CDD | 86 |
| 13C-H6CDF | 84 |
| 13C-H6CDD | 83 |
| 13C-H7CDF | 70 |
| 13C-H7CDD | 71 |
| 13C-O8CDD | 69 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.0873 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.0849 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: COMP.#16

AXYS FILE: L1935-16

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Oct-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blood

METHOD NO.: DX-B-06/Ver.1

SAMPLE SIZE: 0.118 g lipid

**Hong Thuong Commune
Human Blood (lipid basis)
Males >25**

INSTRUMENT: GC-HRMS

% LIPID: 0.3

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 21 | 1.9 | T4CDF - Total | ND | 1.9 |
| 2,3,7,8 | 21 | 1.9 | 2,3,7,8 | ND | 1.9 |
| P5CDD - Total | 5.6 | 1.9 | P5CDF - Total | ND | 1.9 |
| 1,2,3,7,8 | 5.6 | 1.9 | 1,2,3,7,8 | ND | 1.9 |
| | | | 2,3,4,7,8 | NDR(6.7) | 1.9 |
| H6CDD - Total | 15 | 1.9 | H6CDF - Total | 49 | 1.9 |
| 1,2,3,4,7,8 | NDR(4.4) | 1.9 | 1,2,3,4,7,8 | 29 | 1.9 |
| 1,2,3,6,7,8 | 15 | 1.9 | 1,2,3,6,7,8 | 18 | 1.9 |
| 1,2,3,7,8,9 | NDR(5.2) | 1.9 | 2,3,4,6,7,8 | 1.9 | 1.9 |
| | | | 1,2,3,7,8,9 | ND | 1.9 |
| H7CDD - Total | 24 | 1.9 | H7CDF - Total | 53 | 1.9 |
| 1,2,3,4,6,7,8 | 21 | 1.9 | 1,2,3,4,6,7,8 | 48 | 1.9 |
| | | | 1,2,3,4,7,8,9 | 5.2 | 1.9 |
| O8CDD | 120 | 3.0 | O8CDF | 3.7 | 1.9 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 82 |
| 13C-T4CDD | 84 |
| 13C-P5CDF | 82 |
| 13C-P5CDD | 86 |
| 13C-H6CDF | 84 |
| 13C-H6CDD | 83 |
| 13C-H7CDF | 70 |
| 13C-H7CDD | 71 |
| 13C-O8CDD | 69 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 32.3 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 31.5 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

Section 5

**Dioxin/Furan Analysis Reports:
Vacutainer Proof**

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: VACUTAINER PROOF

AXYS FILE: L2111-1

CLIENT: Hatfield Consultants Ltd.

DATE: 08-Dec-1999

CLIENT NO.: 2607

SAMPLE TYPE: Proof

METHOD NO.: SOP# Lab2/Ver.2607

SAMPLE SIZE: 1 sample (25 vacutainers)

INSTRUMENT: GC-HRMS

CONCENTRATION IN pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.1 | T4CDF - Total | ND | 0.09 |
| 2,3,7,8 | ND | 0.1 | 2,3,7,8 | ND | 0.09 |
| P5CDD - Total | ND | 0.1 | P5CDF - Total | ND | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | ND | 0.1 | H6CDF - Total | 0.3 | 0.07 |
| 1,2,3,4,7,8 | ND | 0.1 | 1,2,3,4,7,8 | 0.3 | 0.07 |
| 1,2,3,6,7,8 | ND | 0.1 | 1,2,3,6,7,8 | ND | 0.07 |
| 1,2,3,7,8,9 | ND | 0.1 | 2,3,4,6,7,8 | ND | 0.07 |
| | | | 1,2,3,7,8,9 | ND | 0.07 |
| H7CDD - Total | 0.2 | 0.07 | H7CDF - Total | 0.4 | 0.09 |
| 1,2,3,4,6,7,8 | NDR (0.1) | 0.07 | 1,2,3,4,6,7,8 | 0.2 | 0.09 |
| | | | 1,2,3,4,7,8,9 | ND | 0.09 |
| O8CDD | 1.2 | 0.1 | O8CDF | 0.1 | 0.09 |

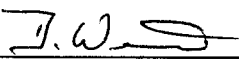
Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 97 |
| 13C-T4CDD | 100 |
| 13C-P5CDF | 99 |
| 13C-P5CDD | 100 |
| 13C-H6CDF | 100 |
| 13C-H6CDD | 100 |
| 13C-H7CDF | 95 |
| 13C-H7CDD | 98 |
| 13C-O8CDD | 110 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.187 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.034 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: VACUTAINER PROOF

AXYS FILE: WG2146-2 (DUP. L2111-1)

CLIENT: Hatfield Consultants Ltd.

DATE: 08-Dec-1999

CLIENT NO.: 2607

SAMPLE TYPE: Proof

METHOD NO.: SOP# Lab2/Ver.2607

SAMPLE SIZE: 1 sample (25 vacutainers)

INSTRUMENT: GC-HRMS

CONCENTRATION IN pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.1 | T4CDF - Total | ND | 0.08 |
| 2,3,7,8 | ND | 0.1 | 2,3,7,8 | ND | 0.08 |
| P5CDD - Total | ND | 0.1 | P5CDF - Total | ND | 0.2 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.2 |
| | | | 2,3,4,7,8 | ND | 0.2 |
| H6CDD - Total | ND | 0.08 | H6CDF - Total | 0.3 | 0.07 |
| 1,2,3,4,7,8 | ND | 0.08 | 1,2,3,4,7,8 | 0.3 | 0.07 |
| 1,2,3,6,7,8 | ND | 0.08 | 1,2,3,6,7,8 | ND | 0.07 |
| 1,2,3,7,8,9 | ND | 0.08 | 2,3,4,6,7,8 | ND | 0.07 |
| | | | 1,2,3,7,8,9 | ND | 0.07 |
| H7CDD - Total | 0.1 | 0.06 | H7CDF - Total | ND | 0.07 |
| 1,2,3,4,6,7,8 | NDR(0.09) | 0.06 | 1,2,3,4,6,7,8 | NDR(0.07) | 0.07 |
| | | | 1,2,3,4,7,8,9 | ND | 0.07 |
| O8CDD | 1.0 | 0.1 | O8CDF | 0.1 | 0.1 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 92 |
| 13C-T4CDD | 96 |
| 13C-P5CDF | 89 |
| 13C-P5CDD | 91 |
| 13C-H6CDF | 90 |
| 13C-H6CDD | 90 |
| 13C-H7CDF | 84 |
| 13C-H7CDD | 88 |
| 13C-O8CDD | 92 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.196 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.029 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

Section 6

**PCB/Pesticide Analysis Reports:
Human Breast Milk**

PCB/PESTICIDE ANALYSIS REPORT


CL003D

| | | | |
|--------------------|----------------------|-------------------|---------------|
| CLIENT SAMPLE I.D: | COMPOSITE #1 | AXYS ID: | L2072-4 |
| CLIENT: | Hatfield Consultants | DATE: | 14-Dec-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | CL-T-03/Ver.3 |
| SAMPLE TYPE: | Oil | INSTRUMENT: | GC-MS/GC-ECD |
| SAMPLE SIZE: | 1.02 g (wet) | F1/F2 RUNFILE ID: | CL995512.D |
| | | F3 RUNFILE ID: | 58174 |
| | | CONCENTRATION IN: | ng/g |

| Compounds | Concentration | (SDL) |
|-----------------------|---------------|-------|
| Hexachlorobenzene | ND | 0.28 |
| alpha HCH | ND | 0.38 |
| beta HCH | ND | 0.52 |
| gamma HCH | ND | 0.37 |
| Heptachlor | ND | 2.4 |
| Aldrin | ND | 0.55 |
| Oxychlorane | ND | 2.1 |
| trans-Chlordane | ND | 0.48 |
| cis-Chlordane | ND | 0.43 |
| o,p'-DDE | ND | 0.19 |
| p,p'-DDE | 6.0 | 0.17 |
| trans-Nonachlor | ND | 0.51 |
| cis-Nonachlor | ND | 0.38 |
| o,p'-DDD | ND | 0.15 |
| p,p'-DDD | ND | 0.16 |
| o,p'-DDT | ND | 0.20 |
| p,p'-DDT | 1.4 | 0.24 |
| Mirex | ND | 0.29 |
| Heptachlor Epoxide | ND | 0.09 |
| alpha-Endosulphan (I) | 2.3 | 0.11 |
| Dieldrin | ND | 0.20 |
| Endrin | ND | 0.33 |
| Methoxychlor | ND | 0.26 |
| Aroclor 1242 | ND | 0.65 |
| Aroclor 1254 | ND | 3.0 |
| Aroclor 1260 | 72 | 3.0 |

| Surrogate Standards | % Recovery |
|-----------------------|------------|
| 13C-Hexachlorobenzene | 69 |
| 13C-gamma HCH | 88 |
| 13C-p,p'-DDE | 97 |
| 13C-p,p'-DDT | 89 |
| 13C-PCB 101 | 91 |
| 13C-PCB 180 | 100 |
| 13C-PCB 209 | 120 |
| d4-alpha-Endosulphan | 88 |

1. SDL = Sample Detection Limit
2. ND = Not Detected
3. NDR = Peak detected but did not meet quantification criteria
4. Data have not been blank corrected
5. Concentrations are recovery corrected
6. Due to similarities among the various Aroclor formulations and/or compositional changes caused by weathering, it is not always possible to identify unique Aroclor patterns in environmental samples. Where non-patterned PCBs are observed, Aroclors are quantified as a mixture of the 1242/1254/1260 formulations.

Approved 

PCB/PESTICIDE ANALYSIS REPORT

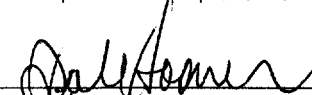
CL003D

| | | | |
|--------------------|----------------------------|--------------------------|------------------------|
| CLIENT SAMPLE I.D: | COMPOSITE # 1 | AXYS ID: | L2044-1 |
| CLIENT: | Hatfield Consultants | DATE: | 17-Dec-1999 |
| CLIENT NO.: | 2607 | REVISED DATE: | 22-Dec-1999 |
| SAMPLE TYPE: | Milk | METHOD NO.: | CL-M-07/Ver.2 |
| | Hong Thuong Commune | | |
| SAMPLE SIZE: | 50.6 g (wet) | Human Breast Milk | INSTRUMENT: |
| | | (wet weight) | GC-MS/GC-ECD |
| % LIPID: | 2.8 | | F1/F2 RUNFILE ID: |
| | | | CL995508.D |
| | | | F3 RUNFILE ID: |
| | | | 58190 |
| | | | CONCENTRATION IN: ng/g |

| Compound | Concentration | SDL |
|-----------------------|--------------------|--------|
| Hexachlorobenzene | 0.049 | 0.0057 |
| alpha HCH | ND | 0.018 |
| beta HCH | 0.14 | 0.024 |
| gamma HCH | ND | 0.017 |
| Heptachlor | ND | 0.084 |
| Aldrin | ND | 0.013 |
| Oxychlorane | ND | 0.051 |
| trans-Chlordane | ND | 0.011 |
| cis-Chlordane | ND | 0.010 |
| o,p'-DDE | ⁸ 0.046 | 0.0031 |
| p,p'-DDE | OLR | |
| trans-Nonachlor | ND | 0.012 |
| cis-Nonachlor | ND | 0.0092 |
| o,p'-DDD | 0.057 | 0.0034 |
| p,p'-DDD | 0.57 | 0.0036 |
| o,p'-DDT | ⁸ 0.73 | 0.0024 |
| p,p'-DDT | OLR | |
| Mirex | 0.037 | 0.0068 |
| Heptachlor Epoxide | ND | 0.0020 |
| alpha-Endosulphan (I) | ND | 0.0030 |
| Dieldrin | 0.0090 | 0.0021 |
| Endrin | ND | 0.0090 |
| Methoxychlor | ND | 0.0080 |
| Aroclor 1242 | ND | 0.091 |
| Aroclor 1254 | ND | 0.23 |
| Aroclor 1260 | 1.5 | 0.22 |

| Surrogate Standard | % Recovery |
|-----------------------|-----------------|
| 13C-Hexachlorobenzene | 66 |
| 13C-gamma HCH | 86 |
| 13C-p,p'-DDE | NQ ⁸ |
| 13C-p,p'-DDT | NQ ⁸ |
| 13C-PCB 101 | 90 |
| 13C-PCB 180 | 100 |
| 13C-PCB 209 | 120 |
| d4-alpha-Endosulphan | 90 |

1. SDL = Sample Detection Limit.
2. ND = Not Detected.
3. NDR = Peak detected but did not meet quantification criteria.
4. Data have not been blank corrected.
5. Concentrations are recovery corrected.
6. Due to similarities among the various Aroclor formulations and/or compositional changes caused by weathering, it is not always possible to identify unique Aroclor patterns in environmental samples. Where non-patterned PCBs are observed, Aroclors are quantified as a mixture of the 1242/1254/1260 formulations.
7. OLR = out of linear range; requires dilution.
8. Surrogate not quantifiable due to interference from high concentration target compound. Flagged analytes were quantified with respect to 13C-PCB 101.



 Approved

PCB/PESTICIDE ANALYSIS REPORT

CL003D

CLIENT SAMPLE I.D: COMPOSITE #1 AXYS ID: L2044-1 N2K
 CLIENT: Hatfield Consultants DATE: 17-Dec-1999
 CLIENT NO.: 2607 REVISED DATE: 22-Dec-1999
 SAMPLE TYPE: Milk **Hong Thuong Commune** METHOD NO.: CL-M-07/Ver.2
 SAMPLE SIZE: 50.6 g (wet) **Human Breast Milk** INSTRUMENT: GC-MS
 (wet weight) F1/F2 RUNFILE ID: CL995680.D
 % LIPID: 2.8
 CONCENTRATION IN: ng/g

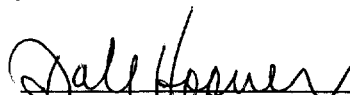
| Compound | Concentration | SDL |
|-----------------------|---------------|------|
| Hexachlorobenzene | | |
| alpha HCH | | |
| beta HCH | | |
| gamma HCH | | |
| Heptachlor | | |
| Aldrin | | |
| Oxychlordane | | |
| trans-Chlordane | | |
| cis-Chlordane | | |
| o,p'-DDE | | |
| p,p'-DDE | 90 | 0.51 |
| trans-Nonachlor | | |
| cis-Nonachlor | | |
| o,p'-DDD | | |
| p,p'-DDD | | |
| o,p'-DDT | | |
| p,p'-DDT | 15 | 0.73 |
| Mirex | | |
| Heptachlor Epoxide | | |
| alpha-Endosulphan (I) | | |
| Dieldrin | | |
| Endrin | | |
| Methoxychlor | | |
| Aroclor 1242 | | |
| Aroclor 1254 | | |
| Aroclor 1260 | | |

Surrogate Standard

% Recovery

13C-Hexachlorobenzene
 13C-gamma HCH
 13C-p,p'-DDE
 13C-p,p'-DDT
 13C-PCB 101
 13C-PCB 180
 13C-PCB 209
 d4-alpha-Endosulphan

1. SDL = Sample Detection Limit
2. ND = Not Detected
3. NDR = Peak detected but did not meet quantification criteria
4. Data have not been blank corrected
5. Concentrations are recovery corrected.
6. Due to similarities among the various Aroclor formulations and/or compositional changes caused by weathering, it is not always possible to identify unique Aroclor patterns in environmental samples. Where non-patterned PCBs are observed, Aroclors are quantified as a mixture of the 1242/1254/1260 formulations.


 Approved

PCB/PESTICIDE ANALYSIS REPORT

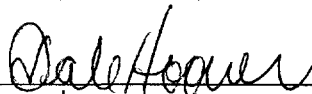
CL003D

CLIENT SAMPLE I.D.: COMPOSITE # 1 AXYS ID: L2044-1
 CLIENT: Hatfield Consultants DATE: 17-Dec-1999
 CLIENT NO.: 2607
 SAMPLE TYPE: Milk
 METHOD NO.: CL-M-07/Ver.2
 SAMPLE SIZE: 1.43 g (lipid) Human Breast Milk (lipid basis)
 INSTRUMENT: GC-MS/GC-ECD
 F1/F2 RUNFILE ID: CL995508.D
 F3 RUNFILE ID: 58190
 CONCENTRATION IN: ng/g

| Compound | Concentration | SDL |
|-----------------------|------------------|-------|
| Hexachlorobenzene | 1.7 | 0.20 |
| alpha HCH | ND | 0.62 |
| beta HCH | 4.8 | 0.84 |
| gamma HCH | ND | 0.60 |
| Heptachlor | ND | 3.0 |
| Aldrin | ND | 0.46 |
| Oxychlorane | ND | 1.8 |
| trans-Chlordane | ND | 0.39 |
| cis-Chlordane | ND | 0.34 |
| o,p'-DDE | ⁸ 1.6 | 0.11 |
| p,p'-DDE | OLR | |
| trans-Nonachlor | ND | 0.44 |
| cis-Nonachlor | ND | 0.33 |
| o,p'-DDD | 2.0 | 0.12 |
| p,p'-DDD | 20 | 0.13 |
| o,p'-DDT | ⁸ 26 | 0.085 |
| p,p'-DDT | OLR | |
| Mirex | 1.3 | 0.24 |
| Heptachlor Epoxide | ND | 0.071 |
| alpha-Endosulphan (I) | ND | 0.11 |
| Dieldrin | 0.32 | 0.074 |
| Endrin | ND | 0.32 |
| Methoxychlor | ND | 0.28 |
| Aroclor 1242 | ND | 3.2 |
| Aroclor 1254 | ND | 8.2 |
| Aroclor 1260 | 54 | 7.9 |

| Surrogate Standard | % Recovery |
|-----------------------|-----------------|
| 13C-Hexachlorobenzene | 66 |
| 13C-gamma HCH | 86 |
| 13C-p,p'-DDE | NQ ⁸ |
| 13C-p,p'-DDT | NQ ⁸ |
| 13C-PCB 101 | 90 |
| 13C-PCB 180 | 100 |
| 13C-PCB 209 | 120 |
| d4-alpha-Endosulphan | 90 |

1. SDL = Sample Detection Limit.
2. ND = Not Detected.
3. NDR = Peak detected but did not meet quantification criteria.
4. Data have not been blank corrected.
5. Concentrations are recovery corrected
6. Due to similarities among the various Aroclor formulations and/or compositional changes caused by weathering, it is not always possible to identify unique Aroclor patterns in environmental samples. Where non-patterned PCBs are observed, Aroclors are quantified as a mixture of the 1242/1254/1260 formulations.
7. OLR = out of linear range, requires dilution.
8. Surrogate not quantifiable due to interference from high concentration target compound. Flagged analytes were quantified with respect to 13C-PCB 101.


 Approved

PCB/PESTICIDE ANALYSIS REPORT

CL003D

CLIENT SAMPLE I.D: COMPOSITE #1 AXYS ID: L2044-1 N2K
 CLIENT: Hatfield Consultants DATE: 17-Dec-1999
 CLIENT NO.: 2607
 SAMPLE TYPE: Milk Hong Thuong Commune METHOD NO.: CL-M-07/Ver.2
 SAMPLE SIZE: 1.43 g (lipid) Human Breast Milk (lipid basis) INSTRUMENT: GC-MS
 F1/F2 RUNFILE ID: CL995680.D
 CONCENTRATION IN: ng/g

| Compound | Concentration | SDL |
|-----------------------|---------------|-----|
| Hexachlorobenzene | | |
| alpha HCH | | |
| beta HCH | | |
| gamma HCH | | |
| Heptachlor | | |
| Aldrin | | |
| Oxychlordan | | |
| trans-Chlordane | | |
| cis-Chlordane | | |
| o,p'-DDE | | |
| p,p'-DDE | 3200 | 18 |
| trans-Nonachlor | | |
| cis-Nonachlor | | |
| o,p'-DDD | | |
| p,p'-DDD | | |
| o,p'-DDT | | |
| p,p'-DDT | 530 | 26 |
| Mirex | | |
| Heptachlor Epoxide | | |
| alpha-Endosulphan (I) | | |
| Dieldrin | | |
| Endrin | | |
| Methoxychlor | | |
| Aroclor 1242 | | |
| Aroclor 1254 | | |
| Aroclor 1260 | | |

Surrogate Standard

% Recovery

13C-Hexachlorobenzene
 13C-gamma HCH
 13C-p,p'-DDE
 13C-p,p'-DDT
 13C-PCB 101
 13C-PCB 180
 13C-PCB 209
 d4-alpha-Endosulphan

1. SDL = Sample Detection Limit
2. ND = Not Detected
3. NDR = Peak detected but did not meet quantification criteria
4. Data have not been blank corrected
5. Corrections are recovery corrected.
6. Due to similarities among the various Aroclor formulations and/or compositional changes caused by weathering, it is not always possible to identify unique Aroclor patterns in environmental samples. Where non-patterned PCBs are observed, Aroclors are quantified as a mixture of the 1242/1254/1260 formulations.


 Approved

PCB/PESTICIDE ANALYSIS REPORT

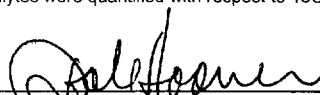
CL003D

| | | | |
|--------------------|--------------------------|-------------------|---------------|
| CLIENT SAMPLE I.D: | COMPOSITE # 2 | AXYS ID: | L2044-2 |
| CLIENT: | Hatfield Consultants | DATE: | 17-Dec-1999 |
| CLIENT NO.: | 2607 | REVISED DATE: | 22-Dec-1999 |
| SAMPLE TYPE: | Milk | METHOD NO.: | CL-M-07/Ver.2 |
| | Huong Lam Commune | | |
| | Human Breast Milk | INSTRUMENT: | GC-MS/GC-ECD |
| SAMPLE SIZE: | 50.8 g (wet) | F1/F2 RUNFILE ID: | CL995509.D |
| | (wet weight) | F3 RUNFILE ID: | 58191 |
| % LIPID: | 3.4 | CONCENTRATION IN: | ng/g |

| Compound | Concentration | SDL |
|-----------------------|--------------------|--------|
| Hexachlorobenzene | 0.073 | 0.0074 |
| alpha HCH | ND | 0.017 |
| beta HCH | 0.32 | 0.023 |
| gamma HCH | ND | 0.016 |
| Heptachlor | ND | 0.058 |
| Aldrin | ND | 0.0088 |
| Oxychlorane | ND | 0.055 |
| trans-Chlordane | ND | 0.013 |
| cis-Chlordane | ND | 0.011 |
| o,p'-DDE | ⁸ 0.032 | 0.0045 |
| p,p'-DDE | OLR | |
| trans-Nonachlor | 0.044 | 0.013 |
| cis-Nonachlor | 0.011 | 0.010 |
| o,p'-DDD | 0.030 | 0.0036 |
| p,p'-DDD | 0.56 | 0.0038 |
| o,p'-DDT | ⁸ 0.55 | 0.0036 |
| p,p'-DDT | OLR | |
| Mirex | 0.012 | 0.0067 |
| Heptachlor Epoxide | ND | 0.0030 |
| alpha-Endosulphan (I) | ND | 0.0040 |
| Dieldrin | NDR 0.010 | 0.0027 |
| Endrin | ND | 0.010 |
| Methoxychlor | ND | 0.010 |
| | | |
| Aroclor 1242 | ND | 0.075 |
| Aroclor 1254 | 0.20 | 0.19 |
| Aroclor 1260 | 1.5 | 0.22 |

| Surrogate Standard | % Recovery |
|-----------------------|-----------------|
| 13C-Hexachlorobenzene | 49 |
| 13C-gamma HCH | 76 |
| 13C-p,p'-DDE | NQ ⁸ |
| 13C-p,p'-DDT | NQ ⁸ |
| 13C-PCB 101 | 94 |
| 13C-PCB 180 | 100 |
| 13C-PCB 209 | 120 |
| d4-alpha-Endosulphan | 100 |

1. SDL = Sample Detection Limit.
2. ND = Not Detected.
3. NDR = Peak detected but did not meet quantification criteria.
4. Data have not been blank corrected.
5. Concentrations are recovery corrected.
6. Due to similarities among the various Aroclor formulations and/or compositional changes caused by weathering, it is not always possible to identify unique Aroclor patterns in environmental samples. Where non-patterned PCBs are observed, Aroclors are quantified as a mixture of the 1242/1254/1260 formulations.
7. OLR = out of linear range; requires dilution.
8. Surrogate not quantifiable due to interference from high concentration target compound. Flagged analytes were quantified with respect to 13C-PCB 101.


 Approved

PCB/PESTICIDE ANALYSIS REPORT

CL003D

| | | | |
|--------------------|--------------------------|-------------------|---------------|
| CLIENT SAMPLE I.D: | COMPOSITE #2 | AXYS ID: | L2044-2 N2K |
| CLIENT: | Hatfield Consultants | DATE: | 17-Dec-1999 |
| CLIENT NO.: | 2607 | REVISED DATE: | 22-Dec-1999 |
| SAMPLE TYPE: | Milk | METHOD NO.: | CL-M-07/Ver.2 |
| | Huong Lam Commune | | |
| SAMPLE SIZE: | 50.8 g (wet) | INSTRUMENT: | GC-MS |
| | Human Breast Milk | F1/F2 RUNFILE ID: | CL995681.D |
| | (wet weight) | | |
| % LIPID: | 3.4 | CONCENTRATION IN: | ng/g |


| Compound | Concentration | SDL |
|-----------------------|---------------|------|
| Hexachlorobenzene | | |
| alpha HCH | | |
| beta HCH | | |
| gamma HCH | | |
| Heptachlor | | |
| Aldrin | | |
| Oxychlordan | | |
| trans-Chlordane | | |
| cis-Chlordane | | |
| o,p'-DDE | | |
| p,p'-DDE | 66 | 0.44 |
| trans-Nonachlor | | |
| cis-Nonachlor | | |
| o,p'-DDD | | |
| p,p'-DDD | | |
| o,p'-DDT | | |
| p,p'-DDT | 14 | 0.60 |
| Mirex | | |
| Heptachlor Epoxide | | |
| alpha-Endosulphan (I) | | |
| Dieldrin | | |
| Endrin | | |
| Methoxychlor | | |
| Aroclor 1242 | | |
| Aroclor 1254 | | |
| Aroclor 1260 | | |

Surrogate Standard

% Recovery

13C-Hexachlorobenzene
 13C-gamma HCH
 13C-p,p'-DDE
 13C-p,p'-DDT
 13C-PCB 101
 13C-PCB 180
 13C-PCB 209
 d4-alpha-Endosulphan

1. SDL = Sample Detection Limit
2. ND = Not Detected
3. NDR = Peak detected but did not meet quantification criteria
4. Data have not been blank corrected
5. Concentrations are recovery corrected.
6. Due to similarities among the various Aroclor formulations and/or compositional changes caused by weathering, it is not always possible to identify unique Aroclor patterns in environmental samples. Where non-patterned PCBs are observed, Aroclors are quantified as a mixture of the 1242/1254/1260 formulations.


 Approved

PCB/PESTICIDE ANALYSIS REPORT

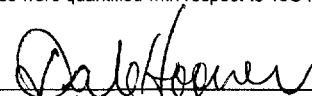
CL003D

CLIENT SAMPLE I.D.: COMPOSITE # 2 AXYS ID: L2044-2
 CLIENT: Hatfield Consultants DATE: 17-Dec-1999
 CLIENT NO.: 2607
 SAMPLE TYPE: Milk **Huong Lam Commune** METHOD NO.: CL-M-07/Ver.2
Human Breast Milk
 SAMPLE SIZE: 1.72 g (lipid) **(lipid basis)** INSTRUMENT: GC-MS/GC-ECD
 F1/F2 RUNFILE ID: CL995509.D
 F3 RUNFILE ID: 58191
 CONCENTRATION IN: ng/g

| Compound | Concentration | SDL |
|-----------------------|-------------------|-------|
| Hexachlorobenzene | 2.2 | 0.22 |
| alpha HCH | ND | 0.50 |
| beta HCH | 9.5 | 0.68 |
| gamma HCH | ND | 0.48 |
| Heptachlor | ND | 1.7 |
| Aldrin | ND | 0.26 |
| Oxychlorane | ND | 1.6 |
| trans-Chlordane | ND | 0.37 |
| cis-Chlordane | ND | 0.33 |
| o,p'-DDE | ⁸ 0.95 | 0.13 |
| p,p'-DDE | OLR | |
| trans-Nonachlor | 1.3 | 0.39 |
| cis-Nonachlor | 0.32 | 0.29 |
| o,p'-DDD | 0.90 | 0.11 |
| p,p'-DDD | 16 | 0.11 |
| o,p'-DDT | ⁸ 16 | 0.11 |
| p,p'-DDT | OLR | |
| Mirex | 0.35 | 0.20 |
| Heptachlor Epoxide | ND | 0.089 |
| alpha-Endosulphan (I) | ND | 0.12 |
| Dieldrin | NDR 0.30 | 0.079 |
| Endrin | ND | 0.30 |
| Methoxychlor | ND | 0.30 |
| Aroclor 1242 | ND | 2.2 |
| Aroclor 1254 | 5.9 | 5.8 |
| Aroclor 1260 | 44 | 6.4 |

| Surrogate Standard | % Recovery |
|-----------------------|-----------------|
| 13C-Hexachlorobenzene | 49 |
| 13C-gamma HCH | 76 |
| 13C-p,p'-DDE | NQ ⁸ |
| 13C-p,p'-DDT | NQ ⁸ |
| 13C-PCB 101 | 94 |
| 13C-PCB 180 | 100 |
| 13C-PCB 209 | 120 |
| d4-alpha-Endosulphan | 100 |

1. SDL = Sample Detection Limit.
2. ND = Not Detected.
3. NDR = Peak detected but did not meet quantification criteria.
4. Data have not been blank corrected.
5. Concentrations are recovery corrected
6. Due to similarities among the various Aroclor formulations and/or compositional changes caused by weathering, it is not always possible to identify unique Aroclor patterns in environmental samples. Where non-patterned PCBs are observed, Aroclors are quantified as a mixture of the 1242/1254/1260 formulations.
7. OLR = out of linear range; requires dilution.
8. Surrogate not quantifiable due to interference from high concentration target compound. Flagged analytes were quantified with respect to 13C-PCB 101.


 Approved

PCB/PESTICIDE ANALYSIS REPORT

CL003D

CLIENT SAMPLE I.D.: COMPOSITE #2 AXYS ID: L2044-2 N2K
 CLIENT: Hatfield Consultants DATE: 17-Dec-1999
 CLIENT NO.: 2607
 SAMPLE TYPE: Milk **Huong Lam Commune** METHOD NO.: CL-M-07/Ver.2
 SAMPLE SIZE: 1.72 g (lipid) **Human Breast Milk** INSTRUMENT: GC-MS
 (lipid basis) F1/F2 RUNFILE ID: CL995681.D
 CONCENTRATION IN: ng/g

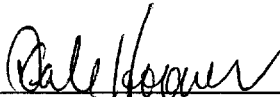
| Compound | Concentration | SDL |
|-----------------------|---------------|-----|
| Hexachlorobenzene | | |
| alpha HCH | | |
| beta HCH | | |
| gamma HCH | | |
| Heptachlor | | |
| Aldrin | | |
| Oxychlorane | | |
| trans-Chlordane | | |
| cis-Chlordane | | |
| o,p'-DDE | | |
| p,p'-DDE | 1900 | 13 |
| trans-Nonachlor | | |
| cis-Nonachlor | | |
| o,p'-DDD | | |
| p,p'-DDD | | |
| o,p'-DDT | | |
| p,p'-DDT | 410 | 18 |
| Mirex | | |
| Heptachlor Epoxide | | |
| alpha-Endosulphan (I) | | |
| Dieldrin | | |
| Endrin | | |
| Methoxychlor | | |
| Aroclor 1242 | | |
| Aroclor 1254 | | |
| Aroclor 1260 | | |

Surrogate Standard

% Recovery

13C-Hexachlorobenzene
 13C-gamma HCH
 13C-p,p'-DDE
 13C-p,p'-DDT
 13C-PCB 101
 13C-PCB 180
 13C-PCB 209
 d4-alpha-Endosulphan

1. SDL = Sample Detection Limit
2. ND = Not Detected
3. NDR = Peak detected but did not meet quantification criteria
4. Data have not been blank corrected
5. Corrections are recovery corrected.
6. Due to similarities among the various Aroclor formulations and/or compositional changes caused by weathering, it is not always possible to identify unique Aroclor patterns in environmental samples. Where non-patterned PCBs are observed, Aroclors are quantified as a mixture of the 1242/1254/1260 formulations.


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PCB/PESTICIDE ANALYSIS REPORT

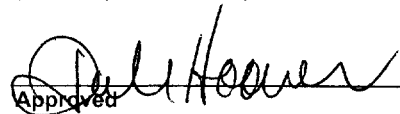
CL003D

| | | | |
|--------------------|--------------------------|-------------------|---------------|
| CLIENT SAMPLE I.D: | COMPOSITE # 3 | AXYS ID: | L2044-3 |
| CLIENT: | Hatfield Consultants | DATE: | 17-Dec-1999 |
| CLIENT NO.: | 2607 | REVISED DATE: | 22-Dec-1999 |
| SAMPLE TYPE: | Milk | METHOD NO.: | CL-M-07/Ver.2 |
| | A So Commune | | |
| | Human Breast Milk | | |
| SAMPLE SIZE: | 49.5 g (wet) | INSTRUMENT: | GC-MS/GC-ECD |
| | (wet weight) | F1/F2 RUNFILE ID: | CL995510.D |
| % LIPID: | 3.2 | F3 RUNFILE ID: | 58192 |
| | | CONCENTRATION IN: | ng/g |

| Compound | Concentration | SDL |
|-----------------------|--------------------|---------|
| Hexachlorobenzene | 0.045 | 0.0055 |
| alpha HCH | ND | 0.018 |
| beta HCH | 0.034 | 0.024 |
| gamma HCH | ND | 0.017 |
| Heptachlor | ND | 0.049 |
| Aldrin | ND | 0.0076 |
| Oxychlordane | ND | 0.055 |
| trans-Chlordane | ND | 0.010 |
| cis-Chlordane | ND | 0.0088 |
| o,p'-DDE | ⁸ 0.055 | 0.0037 |
| p,p'-DDE | OLR | |
| trans-Nonachlor | ND | 0.010 |
| cis-Nonachlor | ND | 0.0074 |
| o,p'-DDD | 0.040 | 0.0036 |
| p,p'-DDD | 0.77 | 0.0039 |
| o,p'-DDT | ⁸ 2.6 | 0.00090 |
| p,p'-DDT | OLR | |
| Mirex | 0.017 | 0.0055 |
| Heptachlor Epoxide | ND | 0.0030 |
| alpha-Endosulphan (I) | ND | 0.0040 |
| Dieldrin | NDR 0.020 | 0.0026 |
| Endrin | ND | 0.010 |
| Methoxychlor | ND | 0.010 |
| Aroclor 1242 | ND | 0.10 |
| Aroclor 1254 | ND | 0.21 |
| Aroclor 1260 | 0.52 | 0.16 |

| Surrogate Standard | % Recovery |
|-----------------------|-----------------|
| 13C-Hexachlorobenzene | 58 |
| 13C-gamma HCH | 78 |
| 13C-p,p'-DDE | NQ ^B |
| 13C-p,p'-DDT | NQ ^B |
| 13C-PCB 101 | 85 |
| 13C-PCB 180 | 94 |
| 13C-PCB 209 | 140 |
| d4-alpha-Endosulphan | 100 |

1. SDL = Sample Detection Limit.
2. ND = Not Detected.
3. NDR = Peak detected but did not meet quantification criteria.
4. Data have not been blank corrected.
5. Concentrations are recovery corrected.
6. Due to similarities among the various Aroclor formulations and/or compositional changes caused by weathering, it is not always possible to identify unique Aroclor patterns in environmental samples. Where non-patterned PCBs are observed, Aroclors are quantified as a mixture of the 1242/1254/1260 formulations.
7. OLR = out of linear range; requires dilution.
8. Surrogate not quantifiable due to interference from high concentration target compound. Flagged analytes were quantified with respect to 13C-PCB 101.


 Approved _____

PCB/PESTICIDE ANALYSIS REPORT

CL003D

| | | | |
|--------------------|--------------------------|-------------------|---------------|
| CLIENT SAMPLE I.D: | COMPOSITE #3 | AXYS ID: | L2044-3 N2K |
| CLIENT: | Hatfield Consultants | DATE: | 17-Dec-1999 |
| CLIENT NO.: | 2607 | REVISED DATE: | 22-Dec-1999 |
| SAMPLE TYPE: | Milk | METHOD NO.: | CL-M-07/Ver.2 |
| | A So Commune | | |
| | Human Breast Milk | | |
| SAMPLE SIZE: | 49.5 g (wet) | INSTRUMENT: | GC-MS |
| | (wet weight) | F1/F2 RUNFILE ID: | CL995682.D |
| % LIPID: | 3.2 | CONCENTRATION IN: | ng/g |

| Compound | Concentration | SDL |
|-----------------------|---------------|------|
| Hexachlorobenzene | | |
| alpha HCH | | |
| beta HCH | | |
| gamma HCH | | |
| Heptachlor | | |
| Aldrin | | |
| Oxychlordan | | |
| trans-Chlordane | | |
| cis-Chlordane | | |
| o,p'-DDE | | |
| p,p'-DDE | 280 | 0.78 |
| trans-Nonachlor | | |
| cis-Nonachlor | | |
| o,p'-DDD | | |
| p,p'-DDD | | |
| o,p'-DDT | | |
| p,p'-DDT | 49 | 1.0 |
| Mirex | | |
| Heptachlor Epoxide | | |
| alpha-Endosulphan (I) | | |
| Dieldrin | | |
| Endrin | | |
| Methoxychlor | | |
| Aroclor 1242 | | |
| Aroclor 1254 | | |
| Aroclor 1260 | | |

Surrogate Standard

% Recovery

13C-Hexachlorobenzene
 13C-gamma HCH
 13C-p,p'-DDE
 13C-p,p'-DDT
 13C-PCB 101
 13C-PCB 180
 13C-PCB 209
 d4-alpha-Endosulphan

1. SDL = Sample Detection Limit
2. ND = Not Detected
3. NDR = Peak detected but did not meet quantification criteria
4. Data have not been blank corrected
5. Concentrations are recovery corrected.
6. Due to similarities among the various Aroclor formulations and/or compositional changes caused by weathering, it is not always possible to identify unique Aroclor patterns in environmental samples. Where non-patterned PCBs are observed, Aroclors are quantified as a mixture of the 1242/1254/1260 formulations.


 Approved

PCB/PESTICIDE ANALYSIS REPORT

CL003D

CLIENT SAMPLE I.D.: COMPOSITE # 3 AXYS ID: L2044-3
 CLIENT: Hatfield Consultants DATE: 17-Dec-1999
 CLIENT NO.: 2607
 SAMPLE TYPE: Milk A So Commune METHOD NO.: CL-M-07/Ver.2
 Human Breast Milk
 SAMPLE SIZE: 1.56 g (lipid) (lipid basis) INSTRUMENT: GC-MS/GC-ECD
 F1/F2 RUNFILE ID: CL995510.D
 F3 RUNFILE ID: 58192
 CONCENTRATION IN: ng/g

| Compound | Concentration | SDL |
|-----------------------|------------------|-------|
| Hexachlorobenzene | 1.4 | 0.17 |
| alpha HCH | ND | 0.56 |
| beta HCH | 1.1 | 0.76 |
| gamma HCH | ND | 0.55 |
| Heptachlor | ND | 1.5 |
| Aldrin | ND | 0.24 |
| Oxychlordane | ND | 1.7 |
| trans-Chlordane | ND | 0.31 |
| cis-Chlordane | ND | 0.28 |
| o,p'-DDE | ⁸ 1.7 | 0.12 |
| p,p'-DDE | OLR | |
| trans-Nonachlor | ND | 0.31 |
| cis-Nonachlor | ND | 0.23 |
| o,p'-DDD | 1.3 | 0.11 |
| p,p'-DDD | 25 | 0.12 |
| o,p'-DDT | ⁸ 83 | 0.029 |
| p,p'-DDT | OLR | |
| Mirex | 0.53 | 0.17 |
| Heptachlor Epoxide | ND | 0.10 |
| alpha-Endosulphan (I) | ND | 0.13 |
| Dieldrin | NDR 0.63 | 0.083 |
| Endrin | ND | 0.32 |
| Methoxychlor | ND | 0.32 |
| Aroclor 1242 | ND | 3.0 |
| Aroclor 1254 | ND | 6.6 |
| Aroclor 1260 | 16 | 5.2 |

| Surrogate Standard | % Recovery |
|-----------------------|-----------------|
| 13C-Hexachlorobenzene | 58 |
| 13C-gamma HCH | 78 |
| 13C-p,p'-DDE | NQ ^B |
| 13C-p,p'-DDT | NQ ^B |
| 13C-PCB 101 | 85 |
| 13C-PCB 180 | 94 |
| 13C-PCB 209 | 140 |
| d4-alpha-Endosulphan | 100 |

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2. ND = Not Detected.
3. NDR = Peak detected but did not meet quantification criteria.
4. Data have not been blank corrected.
5. Concentrations are recovery corrected
6. Due to similarities among the various Aroclor formulations and/or compositional changes caused by weathering, it is not always possible to identify unique Aroclor patterns in environmental samples. Where non-patterned PCBs are observed, Aroclors are quantified as a mixture of the 1242/1254/1260 formulations.
7. OLR = out of linear range; requires dilution.
8. Surrogate not quantifiable due to interference from high concentration target compound. Flagged analytes were quantified with respect to 13C-PCB 101.

Dale Hower
 Approved

PCB/PESTICIDE ANALYSIS REPORT


CL003D

CLIENT SAMPLE I.D: COMPOSITE #3 AXYS ID: L2044-3 N2K
 CLIENT: Hatfield Consultants DATE: 17-Dec-1999
 CLIENT NO.: 2607
 SAMPLE TYPE: Milk A So Commune METHOD NO.: CL-M-07/Ver.2
 SAMPLE SIZE: 1.56 g (lipid) Human Breast Milk (lipid basis) INSTRUMENT: GC-MS
 F1/F2 RUNFILE ID: CL995682.D
 CONCENTRATION IN: ng/g

| Compound | Concentration | SDL |
|-----------------------|---------------|-----|
| Hexachlorobenzene | | |
| alpha HCH | | |
| beta HCH | | |
| gamma HCH | | |
| Heptachlor | | |
| Aldrin | | |
| Oxychlorane | | |
| trans-Chlordane | | |
| cis-Chlordane | | |
| o,p'-DDE | | |
| p,p'-DDE | 8900 | 25 |
| trans-Nonachlor | | |
| cis-Nonachlor | | |
| o,p'-DDD | | |
| p,p'-DDD | | |
| o,p'-DDT | | |
| p,p'-DDT | 1600 | 32 |
| Mirex | | |
| Heptachlor Epoxide | | |
| alpha-Endosulphan (I) | | |
| Dieldrin | | |
| Endrin | | |
| Methoxychlor | | |
| Aroclor 1242 | | |
| Aroclor 1254 | | |
| Aroclor 1260 | | |

| Surrogate Standard | % Recovery |
|-----------------------|------------|
| 13C-Hexachlorobenzene | |
| 13C-gamma HCH | |
| 13C-p,p'-DDE | |
| 13C-p,p'-DDT | |
| 13C-PCB 101 | |
| 13C-PCB 180 | |
| 13C-PCB 209 | |
| d4-alpha-Endosulphan | |

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2. ND = Not Detected
3. NDR = Peak detected but did not meet quantification criteria
4. Data have not been blank corrected
5. Corrections are recovery corrected.
6. Due to similarities among the various Aroclor formulations and/or compositional changes caused by weathering, it is not always possible to identify unique Aroclor patterns in environmental samples. Where non-patterned PCBs are observed, Aroclors are quantified as a mixture of the 1242/1254/1260 formulations.


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PCB/PESTICIDE ANALYSIS REPORT

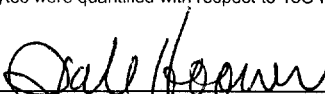
CL003D

| | | | |
|--------------------|--------------------------|-------------------|---------------|
| CLIENT SAMPLE I.D: | COMPOSITE #4 | AXYS ID: | L2044-4 |
| CLIENT: | Hatfield Consultants | DATE: | 17-Dec-1999 |
| CLIENT NO.: | 2607 | REVISED DATE: | 22-Dec-1999 |
| SAMPLE TYPE: | Milk | METHOD NO.: | CL-M-07/Ver.2 |
| | Hong Van Commune | | |
| SAMPLE SIZE: | 50.0 g (wet) | INSTRUMENT: | GC-MS/GC-ECD |
| | Human Breast Milk | F1/F2 RUNFILE ID: | CL995511.D |
| % LIPID: | 3.2 | F3 RUNFILE ID: | 58193 |
| | (wet weight) | CONCENTRATION IN: | ng/g |

| Compound | Concentration | SDL |
|-----------------------|--------------------|---------|
| Hexachlorobenzene | 0.066 | 0.0049 |
| alpha HCH | ND | 0.0087 |
| beta HCH | 0.19 | 0.012 |
| gamma HCH | ND | 0.0084 |
| Heptachlor | ND | 0.045 |
| Aldrin | ND | 0.0058 |
| Oxychlorane | ND | 0.048 |
| trans-Chlordane | ND | 0.013 |
| cis-Chlordane | ND | 0.012 |
| o,p'-DDE | ⁸ 0.057 | 0.0032 |
| p,p'-DDE | OLR | |
| trans-Nonachlor | 0.015 | 0.011 |
| cis-Nonachlor | ND | 0.0079 |
| o,p'-DDD | 0.074 | 0.0038 |
| p,p'-DDD | 0.98 | 0.0040 |
| o,p'-DDT | ⁸ 1.7 | 0.00080 |
| p,p'-DDT | OLR | |
| Mirex | 0.072 | 0.0071 |
| Heptachlor Epoxide | ND | 0.0030 |
| alpha-Endosulphan (I) | ND | 0.0040 |
| Dieldrin | NDR 0.010 | 0.0020 |
| Endrin | ND | 0.010 |
| Methoxychlor | ND | 0.010 |
| Aroclor 1242 | ND | 0.064 |
| Aroclor 1254 | 0.14 | 0.13 |
| Aroclor 1260 | 1.5 | 0.17 |

| Surrogate Standard | % Recovery |
|-----------------------|-----------------|
| 13C-Hexachlorobenzene | 67 |
| 13C-gamma HCH | 81 |
| 13C-p,p'-DDE | NQ ⁸ |
| 13C-p,p'-DDT | NQ ⁸ |
| 13C-PCB 101 | 79 |
| 13C-PCB 180 | 93 |
| 13C-PCB 209 | 120 |
| d4-alpha-Endosulphan | 94 |

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6. Due to similarities among the various Aroclor formulations and/or compositional changes caused by weathering, it is not always possible to identify unique Aroclor patterns in environmental samples. Where non-patterned PCBs are observed, Aroclors are quantified as a mixture of the 1242/1254/1260 formulations.
7. OLR = out of linear range; requires dilution.
8. Surrogate not quantifiable due to interference from high concentration target compound. Flagged analytes were quantified with respect to 13C-PCB 101.


 Approved

PCB/PESTICIDE ANALYSIS REPORT

CL003D

CLIENT SAMPLE I.D: COMPOSITE #4 AXYS ID: L2044-4 N2K
 CLIENT: Hatfield Consultants DATE: 17-Dec-1999
 CLIENT NO.: 2607 REVISD DATE: 22-Dec-1999
 SAMPLE TYPE: Milk Hong Van Commune METHOD NO.: CL-M-07/Ver.2
 SAMPLE SIZE: 50.0 g (wet) Human Breast Milk INSTRUMENT: GC-MS
 % LIPID: 3.2 (wet weight) F1/F2 RUNFILE ID: CL995683.D
 CONCENTRATION IN: ng/g

| Compound | Concentration | SDL |
|-----------------------|---------------|------|
| Hexachlorobenzene | | |
| alpha HCH | | |
| beta HCH | | |
| gamma HCH | | |
| Heptachlor | | |
| Aldrin | | |
| Oxychlordan | | |
| trans-Chlordane | | |
| cis-Chlordane | | |
| o,p'-DDE | | |
| p,p'-DDE | 170 | 1.0 |
| trans-Nonachlor | | |
| cis-Nonachlor | | |
| o,p'-DDD | | |
| p,p'-DDD | | |
| o,p'-DDT | | |
| p,p'-DDT | 42 | 0.82 |
| Mirex | | |
| Heptachlor Epoxide | | |
| alpha-Endosulphan (I) | | |
| Dieldrin | | |
| Endrin | | |
| Methoxychlor | | |
| Aroclor 1242 | | |
| Aroclor 1254 | | |
| Aroclor 1260 | | |

Surrogate Standard

% Recovery

13C-Hexachlorobenzene
 13C-gamma HCH
 13C-p,p'-DDE
 13C-p,p'-DDT
 13C-PCB 101
 13C-PCB 180
 13C-PCB 209
 d4-alpha-Endosulphan

1. SDL = Sample Detection Limit
2. ND = Not Detected
3. NDR = Peak detected but did not meet quantification criteria
4. Data have not been blank corrected
5. Concentrations are recovery corrected.
6. Due to similarities among the various Aroclor formulations and/or compositional changes caused by weathering, it is not always possible to identify unique Aroclor patterns in environmental samples. Where non-patterned PCBs are observed, Aroclors are quantified as a mixture of the 1242/1254/1260 formulations.


 Approved

PCB/PESTICIDE ANALYSIS REPORT

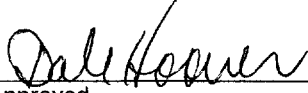
CL003D

CLIENT SAMPLE I.D.: COMPOSITE #4 AXYS ID: L2044-4
 CLIENT: Hatfield Consultants DATE: 17-Dec-1999
 CLIENT NO.: 2607
 SAMPLE TYPE: Milk
 METHOD NO.: CL-M-07/Ver.2
 SAMPLE SIZE: 1.61 g (lipid) Hong Van Commune
 Human Breast Milk
 (lipid basis)
 INSTRUMENT: GC-MS/GC-ECD
 F1/F2 RUNFILE ID: CL995511.D
 F3 RUNFILE ID: 58193
 CONCENTRATION IN: ng/g

| Compound | Concentration | SDL |
|-----------------------|------------------|-------|
| Hexachlorobenzene | 2.1 | 0.15 |
| alpha HCH | ND | 0.27 |
| beta HCH | 6.0 | 0.37 |
| gamma HCH | ND | 0.26 |
| Heptachlor | ND | 1.4 |
| Aldrin | ND | 0.18 |
| Oxychlordane | ND | 1.5 |
| trans-Chlordane | ND | 0.42 |
| cis-Chlordane | ND | 0.37 |
| o,p'-DDE | ⁸ 1.8 | 0.10 |
| p,p'-DDE | OLR | |
| trans-Nonachlor | 0.46 | 0.33 |
| cis-Nonachlor | ND | 0.25 |
| o,p'-DDD | 2.3 | 0.12 |
| p,p'-DDD | 30 | 0.12 |
| o,p'-DDT | ⁸ 53 | 0.025 |
| p,p'-DDT | OLR | |
| Mirex | 2.2 | 0.22 |
| Heptachlor Epoxide | ND | 0.093 |
| alpha-Endosulphan (I) | ND | 0.12 |
| Dieldrin | NDR 0.31 | 0.061 |
| Endrin | ND | 0.31 |
| Methoxychlor | ND | 0.31 |
| Aroclor 1242 | ND | 2.0 |
| Aroclor 1254 | 4.4 | 4.0 |
| Aroclor 1260 | 47 | 5.4 |

| Surrogate Standard | % Recovery |
|-----------------------|-----------------|
| 13C-Hexachlorobenzene | 67 |
| 13C-gamma HCH | 81 |
| 13C-p,p'-DDE | NQ ⁸ |
| 13C-p,p'-DDT | NQ ⁸ |
| 13C-PCB 101 | 79 |
| 13C-PCB 180 | 93 |
| 13C-PCB 209 | 120 |
| d4-alpha-Endosulphan | 94 |

1. SDL = Sample Detection Limit.
2. ND = Not Detected.
3. NDR = Peak detected but did not meet quantification criteria.
4. Data have not been blank corrected.
5. Concentrations are recovery corrected
6. Due to similarities among the various Aroclor formulations and/or compositional changes caused by weathering, it is not always possible to identify unique Aroclor patterns in environmental samples. Where non-patterned PCBs are observed, Aroclors are quantified as a mixture of the 1242/1254/1260 formulations.
7. OLR = out of linear range; requires dilution.
8. Surrogate not quantifiable due to interference from high concentration target compound. Flagged analytes were quantified with respect to 13C-PCB 101.


 Approved

PCB/PESTICIDE ANALYSIS REPORT

CL003D

| | | | |
|--------------------|--------------------------|-------------------|---------------|
| CLIENT SAMPLE I.D: | COMPOSITE #4 | AXYS ID: | L2044-4 N2K |
| CLIENT: | Hatfield Consultants | DATE: | 17-Dec-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | CL-M-07/Ver.2 |
| SAMPLE TYPE: | Milk | INSTRUMENT: | GC-MS |
| | Hong Van Commune | F1/F2 RUNFILE ID: | CL995683.D |
| SAMPLE SIZE: | 1.43 g (lipid) | CONCENTRATION IN: | ng/g |
| | Human Breast Milk | | |
| | (lipid basis) | | |

| Compound | Concentration | SDL |
|-----------------------|---------------|-----|
| Hexachlorobenzene | | |
| alpha HCH | | |
| beta HCH | | |
| gamma HCH | | |
| Heptachlor | | |
| Aldrin | | |
| Oxychlordane | | |
| trans-Chlordane | | |
| cis-Chlordane | | |
| o,p'-DDE | | |
| p,p'-DDE | 5900 | 35 |
| trans-Nonachlor | | |
| cis-Nonachlor | | |
| o,p'-DDD | | |
| p,p'-DDD | | |
| o,p'-DDT | | |
| p,p'-DDT | 1500 | 29 |
| Mirex | | |
| Heptachlor Epoxide | | |
| alpha-Endosulphan (I) | | |
| Dieldrin | | |
| Endrin | | |
| Methoxychlor | | |
| Aroclor 1242 | | |
| Aroclor 1254 | | |
| Aroclor 1260 | | |

Surrogate Standard % Recovery

13C-Hexachlorobenzene

13C-gamma HCH

13C-p,p'-DDE

13C-p,p'-DDT

13C-PCB 101

13C-PCB 180

13C-PCB 209

d4-alpha-Endosulphan

1. SDL = Sample Detection Limit
2. ND = Not Detected
3. NDR = Peak detected but did not meet quantification criteria
4. Data have not been blank corrected
5. Corrections are recovery corrected.
6. Due to similarities among the various Aroclor formulations and/or compositional changes caused by weathering, it is not always possible to identify unique Aroclor patterns in environmental samples. Where non-patterned PCBs are observed, Aroclors are quantified as a mixture of the 1242/1254/1260 formulations.


 Approved


Section 7

**Particle Size Distribution (Soil)
Total Organic Carbon (Soil)**

| TOC via Leco | | | | | TOC via |
|--------------|----------|-------------|------------------|-----|-------------|
| Soilcon | | | | | Leco Carbon |
| Job # | Date | Client | Sample | # | (%) |
| 99-109 | 7-May-99 | AXYS | L1610-1 | 1 | 1.60 |
| | | Gita Nayeri | L1610-2 | 2 | 2.19 |
| | | | L1610-2-Dup | 2D | 1.94 |
| | | | L1610-3 | 3 | 1.55 |
| | | | L1610-3-Dup | 3D | 1.33 |
| | | | L1610-4 | 4 | 1.49 |
| | | | L1610-5 | 5 | 1.58 |
| | | | L1610-6 | 6 | 1.31 |
| | | | L1610-7 | 7 | 0.85 |
| | | | L1610-8 | 8 | 1.85 |
| | | | L1610-9 | 9 | 1.08 |
| | | | L1610-10 | 10 | 1.48 |
| | | | L1610-11 | 11 | 2.05 |
| | | | L1610-12 | 12 | 1.92 |
| | | | L1610-13 | 13 | 1.31 |
| | | | L1610-14 | 14 | 0.81 |
| | | | L1610-15 | 15 | 1.31 |
| | | | L1610-16 | 16 | 1.29 |
| | | | L1610-17 | 17 | 1.27 |
| | | | L1610-18 | 18 | 1.67 |
| | | | L1610-19 | 19 | 1.59 |
| | | | L1610-20 | 20 | 1.80 |
| | | | L1610-21 | 21 | 1.64 |
| | | | L1610-22 | 22 | 1.67 |
| | | | L1610-23 | 23 | 2.92 |
| | | | L1610-24 | 24 | 1.28 |
| | | | L1610-25 | 25 | 2.42 |
| | | | L1610-26 | 26 | 1.89 |
| | | | L1610-27 | 27 | 1.49 |
| | | | L1610-28 | 28 | 2.01 |
| | | | L1610-29 | 29 | 1.35 |
| | | | L1610-30 | 30 | 1.62 |
| | | | L1610-30-Dup | 30D | 1.48 |
| | | | L1610-31 | 31 | 2.18 |
| | | | L1610-32 | 32 | 2.38 |
| | | | L1610-33 | 33 | 2.09 |
| | | | L1610-34 | 34 | 1.75 |
| | | | L1610-35 | 35 | 2.15 |
| | | | L1610-36 | 36 | 1.80 |
| | | | L1610-37 | 37 | 1.96 |
| | | | L1610-38 | 38 | 1.74 |
| | | | L1610-39 | 39 | 1.18 |
| | | | L1610-40 | 40 | 1.89 |
| | | | L1610-41 | 41 | 1.78 |
| | | | L1610-41-Dup | 41D | 1.56 |
| | | | L1610-42 | 42 | 1.38 |
| | | | L1610-43 | 43 | 1.54 |
| | | | L1610-44 | 44 | 1.21 |
| | | | L1610-45 | 45 | 1.46 |
| | | | L1610-46 | 46 | 1.88 |
| | | | L1610-47 | 47 | 1.43 |
| | | | Knoxville | Std | 2.17 |
| | | | Knoxville Median | | 1.94 |
| | | | Knoxville Range | | 1.66-2.22 |

Note: All samples were pretreated for carbonates.

Loi99 TOC - Leco
Liability is limited to testing fee paid.

Initials: 

00196

| 1999 Particle Size Distribution | | | | | Particle Size Distribution | | | | |
|---------------------------------|-----------|-----------------|----------|-----|----------------------------------|-----------|-------|---------|-------|
| Soilcon Job # | Date | Client | Sample | # | Percent Less Than By Weight (mm) | | | | |
| | | | | | Dry Sieve 2.00 | Wet Sieve | | Pipette | |
| | | | | | 0.250 | 0.125 | 0.053 | 0.002 | |
| 99-109 | 30-Apr-99 | Axys Analytical | L1610-1 | 1 | 96.75 | 84.43 | 66.50 | 50.05 | 9.55 |
| | | Gita Nayeri | L1610-2 | 2 | 96.79 | 85.06 | 65.90 | 49.25 | 9.15 |
| | | | L1610-3 | 3 | 96.26 | 84.17 | 65.34 | 48.76 | 9.42 |
| | | | L1610-4 | 4 | 98.80 | 93.71 | 79.86 | 63.57 | 9.52 |
| | | | L1610-5 | 5 | 99.75 | 90.08 | 72.64 | 56.43 | 11.78 |
| | | | L1610-6 | 6 | 99.35 | 91.48 | 74.35 | 55.66 | 8.55 |
| | | | L1610-7 | 7 | 98.40 | 92.29 | 76.55 | 56.97 | 8.68 |
| | | | L1610-8 | 8 | 99.76 | 89.37 | 69.58 | 51.13 | 6.31 |
| | | | L1610-9 | 9 | 99.27 | 86.60 | 61.69 | 41.93 | 5.33 |
| | | | L1610-10 | 10 | 99.47 | 93.79 | 82.38 | 65.11 | 12.32 |
| | | | L1610-11 | 11 | 93.92 | 85.13 | 79.30 | 68.61 | 23.40 |
| | | | L1610-12 | 12 | 92.76 | 84.54 | 78.78 | 68.09 | 23.31 |
| | | | L1610-13 | 13 | 95.39 | 86.49 | 80.02 | 67.67 | 21.68 |
| | | | L1610-14 | 14 | 99.88 | 97.60 | 88.79 | 59.20 | 10.35 |
| | | | L1610-15 | 15 | 95.21 | 85.73 | 78.35 | 57.62 | 16.41 |
| | | | L1610-16 | 16 | 98.10 | 87.17 | 67.81 | 45.39 | 11.94 |
| | | | L1610-17 | 17 | 99.39 | 85.19 | 62.05 | 33.37 | 4.73 |
| | | | L1610-18 | 18 | 95.61 | 81.98 | 74.90 | 60.77 | 21.94 |
| | | | L1610-19 | 19 | 97.80 | 89.64 | 81.23 | 68.12 | 22.56 |
| | | | L1610-20 | 20 | 93.84 | 75.18 | 67.41 | 57.83 | 17.97 |
| | | | L1610-21 | 21 | 97.82 | 89.29 | 84.63 | 76.52 | 33.21 |
| | | | L1610-22 | 22 | 97.40 | 81.85 | 74.13 | 63.65 | 22.09 |
| | | | L1610-23 | 23 | 98.99 | 88.36 | 80.11 | 67.48 | 26.28 |
| | | | L1610-24 | 24 | 97.23 | 60.84 | 46.64 | 33.27 | 9.71 |
| | | | L1610-25 | 25 | 98.81 | 92.80 | 87.01 | 69.93 | 16.55 |
| | | | L1610-26 | 26 | 96.72 | 75.23 | 67.06 | 55.72 | 16.68 |
| | | | L1610-27 | 27 | 99.64 | 94.23 | 90.31 | 82.86 | 25.14 |
| | | | L1610-28 | 28 | 95.84 | 86.20 | 79.20 | 62.43 | 22.60 |
| | | | L1610-29 | 29 | 92.22 | 84.41 | 79.97 | 70.89 | 28.81 |
| | | | L1610-30 | 30 | 96.33 | 85.77 | 76.16 | 57.30 | 21.17 |
| | | | L1610-31 | 31 | 86.11 | 76.67 | 71.80 | 60.84 | 30.10 |
| | | | L1610-32 | 32 | 96.54 | 86.56 | 80.35 | 64.56 | 26.08 |
| | | | L1610-33 | 33 | 92.77 | 83.70 | 79.30 | 69.08 | 33.31 |
| | | | L1610-34 | 34 | 92.19 | 84.51 | 81.31 | 72.88 | 35.90 |
| | | | L1610-35 | 35 | 95.11 | 83.07 | 76.81 | 63.70 | 29.96 |
| | | | L1610-36 | 36 | 96.02 | 88.27 | 83.37 | 67.73 | 26.13 |
| | | | Dup-36 | 36B | 96.02 | 87.69 | 82.83 | 67.43 | 26.78 |
| | | | L1610-37 | 37 | 98.24 | 82.34 | 74.58 | 65.00 | 19.01 |

Percent Gravel is based upon the entire sample. Percent Sand, Silt and Clay sum to 100%.

99ps PS99

Liability is limited to testing fee paid.

Initials: 

00197

| 1999 Particle Size Distribution | | | | | Particle Size Distribution | | | | |
|---------------------------------|-----------|-----------------|--------------------|-----|----------------------------------|-----------|-------|---------|-------|
| | | | | | Percent Less Than By Weight (mm) | | | | |
| Soilcon | | | | | Dry Sieve | Wet Sieve | | Pipette | |
| Job # | Date | Client | Sample | # | 2.00 | 0.250 | 0.125 | 0.053 | 0.002 |
| | | | L1610-38 | 38 | 99.05 | 89.54 | 83.42 | 73.24 | 21.70 |
| 99-109 | 30-Apr-99 | Axys Analytical | L1610-39 | 39 | 94.80 | 61.08 | 52.78 | 45.07 | 16.31 |
| | | Gita Nayeri | L1610-40 | 40 | 94.41 | 64.82 | 54.64 | 45.72 | 14.85 |
| | | | L1610-41 | 41 | 98.24 | 79.33 | 70.02 | 58.72 | 16.38 |
| | | | Dup-41 | 41B | 98.24 | 78.26 | 69.26 | 58.30 | 15.83 |
| | | | L1610-42 | 42 | 95.54 | 72.32 | 63.58 | 52.62 | 14.84 |
| | | | L1610-43 | 43 | 96.82 | 80.13 | 72.45 | 62.11 | 18.12 |
| | | | Dup-43 | 43B | 96.82 | 78.69 | 71.20 | 61.18 | 17.57 |
| | | | L1610-44 | 44 | 98.54 | 82.36 | 73.82 | 62.51 | 18.93 |
| | | | L1610-45 | 45 | 95.85 | 82.07 | 75.55 | 67.17 | 20.75 |
| | | | L1610-46 | 46 | 98.15 | 83.42 | 75.83 | 66.48 | 19.77 |
| | | | L1610-47 | 47 | 95.44 | 76.55 | 69.09 | 59.83 | 18.74 |
| | | | SCS#12, rep 1 | | 100.00 | 49.91 | 32.86 | 20.84 | 4.68 |
| | | | SCS#12, rep 2 | | 100.00 | 47.85 | 31.61 | 20.77 | 4.72 |
| | | | SCS#12 Mean | | 100.00 | 47.78 | 31.74 | 20.29 | 4.73 |
| | | | Standard Deviation | | 0.00 | 1.17 | 0.98 | 0.57 | 0.27 |

Percent Gravel is based upon the entire sample. Percent Sand, Silt and Clay sum to 100%.

99ps PS99

Liability is limited to testing fee paid.

Initials: 

00198

| 1999 Particle Size Distribution | | | | | Percent By Weight, By Category | | | | USDA Textural Category | Quality Control | | |
|---------------------------------|-----------|---------------------------------|----------|----|--------------------------------|-----------------------------|------------------------------|-----------------------|------------------------------|---|-------|--|
| Soilcon Job # | Date | Client | Sample | # | %Gravel >2.00 mm | %Sand <2.00 mm >0.053 | %Silt <0.053 mm >0.002 | %Clay <0.002 mm | | % < 53 um wet sieve pipette (% by weight) | | % Difference (not to exceed ±5%) |
| 99-109 | 30-Apr-99 | Axy's Analytical Gita Nayeri | L1610-1 | 1 | 3.25 | 48.27 | 41.86 | 9.87 | Loam | 50.29 | 50.05 | 0.25 |
| | | | L1610-2 | 2 | 3.21 | 49.12 | 41.43 | 9.46 | Loam | No duplicate | | |
| | | | L1610-3 | 3 | 3.74 | 49.34 | 40.87 | 9.79 | Loam | No duplicate | | |
| | | | L1610-4 | 4 | 1.20 | 35.66 | 54.70 | 9.63 | Silt loam | No duplicate | | |
| | | | L1610-5 | 5 | 0.25 | 43.43 | 44.76 | 11.81 | Loam | 56.85 | 56.43 | 0.42 |
| | | | L1610-6 | 6 | 0.65 | 43.97 | 47.43 | 8.60 | Loam | 56.78 | 55.66 | 1.12 |
| | | | L1610-7 | 7 | 1.60 | 42.10 | 49.08 | 8.82 | Loam | 57.76 | 56.97 | 0.79 |
| | | | L1610-8 | 8 | 0.24 | 48.74 | 44.93 | 6.33 | Sandy loam | 51.80 | 51.13 | 0.67 |
| | | | L1610-9 | 9 | 0.73 | 57.76 | 36.87 | 5.37 | Sandy loam | 42.65 | 41.93 | 0.71 |
| | | | L1610-10 | 10 | 0.53 | 34.54 | 53.07 | 12.38 | Silt loam | No duplicate | | |
| | | | L1610-11 | 11 | 6.08 | 26.95 | 48.13 | 24.92 | Loam | No duplicate | | |
| | | | L1610-12 | 12 | 7.24 | 26.60 | 48.28 | 25.13 | Loam | No duplicate | | |
| | | | L1610-13 | 13 | 4.61 | 29.06 | 48.21 | 22.73 | Loam | No duplicate | | |
| | | | L1610-14 | 14 | 0.12 | 40.72 | 48.91 | 10.37 | Loam | 59.02 | 59.20 | -0.18 |
| | | | L1610-15 | 15 | 4.79 | 39.48 | 43.29 | 17.24 | Loam | 57.66 | 57.62 | 0.04 |
| | | | L1610-16 | 16 | 1.90 | 53.73 | 34.10 | 12.17 | Sandy loam | 46.71 | 45.39 | 1.32 |
| | | | L1610-17 | 17 | 0.61 | 66.42 | 28.82 | 4.76 | Sandy loam | 36.49 | 33.37 | 3.12 |
| | | | L1610-18 | 18 | 4.39 | 36.44 | 40.61 | 22.94 | Loam | 60.79 | 60.77 | 0.03 |
| | | | L1610-19 | 19 | 2.20 | 30.36 | 46.58 | 23.06 | Loam | 70.09 | 68.12 | 1.97 |
| | | | L1610-20 | 20 | 6.16 | 38.37 | 42.48 | 19.14 | Loam | 58.19 | 57.83 | 0.35 |
| | | | L1610-21 | 21 | 2.18 | 21.77 | 44.27 | 33.95 | Clay loam | 76.57 | 76.52 | 0.04 |
| | | | L1610-22 | 22 | 2.60 | 34.65 | 42.67 | 22.68 | Loam | 63.82 | 63.65 | 0.17 |
| | | | L1610-23 | 23 | 1.01 | 31.83 | 41.63 | 26.54 | Loam | 67.92 | 67.48 | 0.43 |
| | | | L1610-24 | 24 | 2.77 | 65.78 | 24.23 | 9.99 | Sandy loam | 34.31 | 33.27 | 1.04 |
| | | | L1610-25 | 25 | 1.19 | 29.23 | 54.02 | 16.75 | Silt loam | 71.81 | 69.93 | 1.89 |
| | | | L1610-26 | 26 | 3.28 | 42.39 | 40.36 | 17.25 | Loam | 55.60 | 55.72 | -0.11 |
| | | | L1610-27 | 27 | 0.36 | 16.83 | 57.93 | 25.24 | Silt loam | 82.34 | 82.86 | -0.53 |
| | | | L1610-28 | 28 | 4.16 | 34.86 | 41.56 | 23.58 | Loam | 63.11 | 62.43 | 0.68 |
| | | | L1610-29 | 29 | 7.78 | 23.13 | 45.62 | 31.25 | Clay loam | No duplicate | | |
| | | | L1610-30 | 30 | 3.67 | 40.52 | 37.51 | 21.97 | Loam | 57.42 | 57.30 | 0.12 |
| | | | L1610-31 | 31 | 13.89 | 29.34 | 35.70 | 34.96 | Clay loam | 61.12 | 60.84 | 0.28 |
| | | | L1610-32 | 32 | 3.46 | 33.13 | 39.86 | 27.02 | Clay loam | 65.75 | 64.56 | 1.20 |
| | | | L1610-33 | 33 | 7.23 | 25.53 | 38.57 | 35.90 | Clay loam | No duplicate | | |
| | | | L1610-34 | 34 | 7.81 | 20.95 | 40.12 | 38.94 | Clay loam | No duplicate | | |
| | | | L1610-35 | 35 | 4.89 | 33.03 | 35.47 | 31.50 | Clay loam | 64.59 | 63.70 | 0.90 |
| | | | L1610-36 | 36 | 3.98 | 29.46 | 43.33 | 27.21 | Clay loam | 68.32 | 67.73 | 0.59 |
| | | | | | | Dup-36 | 36B | 3.98 | 29.77 | 42.34 | 27.89 | Clay loam |
| | | | L1610-37 | 37 | 1.76 | 33.83 | 46.82 | 19.35 | Loam | 65.56 | 65.00 | 0.56 |

Percent Gravel is based upon the entire sample. Percent Sand, Silt and Clay sum to 100%.

99ps PS99

Liability is limited to testing fee paid.

Initials: 

00199

| 1999 Particle Size Distribution | | | | | Percent By Weight, By Category | | | | USDA Textural Category | Quality Control | | |
|---------------------------------|-----------|---------------------------------|----------|-----|--------------------------------|-----------------------------|------------------------------|-----------------------|------------------------------|---|-------|--|
| Soilcon Job # | Date | Client | Sample | # | %Gravel >2.00 mm | %Sand <2.00 mm >0.053 | %Silt <0.053 mm >0.002 | %Clay <0.002 mm | | % < 53 um wet sieve pipette (% by weight) | | % Difference (not to exceed ±5%) |
| 99-109 | 30-Apr-99 | Axy's Analytical Gita Nayeri | L1610-38 | 38 | 0.95 | 26.06 | 52.03 | 21.91 | Silt loam | 73.74 | 73.24 | 0.50 |
| | | | L1610-39 | 39 | 5.20 | 52.45 | 30.34 | 17.21 | Sandy loam | 44.46 | 45.07 | -0.62 |
| | | | L1610-40 | 40 | 5.59 | 51.57 | 32.70 | 15.73 | Loam | 45.79 | 45.72 | 0.07 |
| | | | L1610-41 | 41 | 1.76 | 40.23 | 43.10 | 16.67 | Loam | 58.84 | 58.72 | 0.12 |
| | | | Dup-41 | 41B | 1.76 | 40.65 | 43.23 | 16.12 | Loam | 58.40 | 58.30 | 0.10 |
| | | | L1610-42 | 42 | 4.46 | 44.92 | 39.55 | 15.53 | Loam | 52.34 | 52.62 | -0.28 |
| | | | L1610-43 | 43 | 3.18 | 35.85 | 45.43 | 18.72 | Loam | 61.98 | 62.11 | -0.13 |
| | | | Dup-43 | 43B | 3.18 | 36.82 | 45.04 | 18.14 | Loam | 61.12 | 61.18 | -0.06 |
| | | | L1610-44 | 44 | 1.46 | 36.56 | 44.23 | 19.21 | Loam | 62.89 | 62.51 | 0.38 |
| | | | L1610-45 | 45 | 4.15 | 29.92 | 48.43 | 21.65 | Loam | 66.84 | 67.17 | -0.33 |
| | | | L1610-46 | 46 | 1.85 | 32.26 | 47.60 | 20.14 | Loam | 66.78 | 66.48 | 0.29 |
| | | | L1610-47 | 47 | 4.56 | 37.31 | 43.05 | 19.64 | Loam | 59.96 | 59.83 | 0.12 |
| | | SCS#12, rep 1 | | | 0.00 | 79.16 | 16.16 | 4.68 | Loamy sand | 21.14 | 20.84 | 0.30 |
| | | SCS#12, rep 2 | | | 0.00 | 79.23 | 16.05 | 4.72 | Loamy sand | 20.97 | 20.77 | 0.20 |
| | | SCS#12 Mean | | | 0.00 | 79.71 | 15.46 | 4.83 | Loamy sand | | | |
| | | Standard Deviation | | | 0.00 | 0.56 | 0.60 | 0.16 | | | | |

Percent Gravel is based upon the entire sample. Percent Sand, Silt and Clay sum to 100%.

99ps PS99

Liability is limited to testing fee paid.

Initials: 

00200

Section 8

Laboratory Quality Control: Sample Reports

- **Procedural Blanks**

- Soil (PCDD/PCDF)
- Plant and Animal Tissues (PCDD/PCDF)
- Milk (PCDD/PCDF)
- Human Whole Blood (PCDD/PCDF)
- Human Breast Milk (PCB/Pesticides)

- **Spiked Matrix**

- Soil (PCDD/PCDF)
- Plant and Animal Tissues (PCDD/PCDF)
- Milk (PCDD/PCDF)
- Human Whole Blood (PCDD/PCDF)
- Human Breast Milk (PCB/Pesticides)

Procedural Blanks

Soil Samples

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: Procedural Blank

AXYS FILE: DX-S-BLK 2042

CLIENT: Hatfield Consultants Ltd.

DATE: 20-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blank

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 10.0 g

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.1 | T4CDF - Total | ND | 0.1 |
| 2,3,7,8 | ND | 0.1 | 2,3,7,8 | ND | 0.1 |
| P5CDD - Total | ND | 0.2 | P5CDF - Total | ND | 0.2 |
| 1,2,3,7,8 | ND | 0.2 | 1,2,3,7,8 | ND | 0.2 |
| | | | 2,3,4,7,8 | ND | 0.2 |
| H6CDD - Total | ND | 0.2 | H6CDF - Total | ND | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | ND | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | ND | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | ND | 0.2 | H7CDF - Total | ND | 0.2 |
| 1,2,3,4,6,7,8 | ND | 0.2 | 1,2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 0.5 | 0.3 | O8CDF - Total | ND | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 79 |
| 13C-T4CDD | 83 |
| 13C-P5CDF | 82 |
| 13C-P5CDD | 84 |
| 13C-H6CDF | 86 |
| 13C-H6CDD | 84 |
| 13C-H7CDF | 77 |
| 13C-H7CDD | 76 |
| 13C-O8CDD | 85 |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

M. Hamill
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: Procedural Blank

AXYS FILE: DX-S-BLK 2044

CLIENT: Hatfield Consultants Ltd.

DATE: 19-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blank

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 8.00 g

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.1 | T4CDF - Total | ND | 0.1 |
| 2,3,7,8 | ND | 0.1 | 2,3,7,8 | ND | 0.1 |
| P5CDD - Total | ND | 0.1 | P5CDF - Total | ND | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | ND | 0.2 | H6CDF - Total | ND | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | ND | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | ND | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | ND | 0.2 | H7CDF - Total | ND | 0.2 |
| 1,2,3,4,6,7,8 | ND | 0.2 | 1,2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 0.9 | 0.3 | O8CDF - Total | ND | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 75 |
| 13C-T4CDD | 74 |
| 13C-P5CDF | 71 |
| 13C-P5CDD | 70 |
| 13C-H6CDF | 80 |
| 13C-H6CDD | 76 |
| 13C-H7CDF | 63 |
| 13C-H7CDD | 57 |
| 13C-O8CDD | 52 |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McMillan
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: Procedural Blank

AXYS FILE: DX-S-BLK 2046

CLIENT: Hatfield Consultants Ltd.

DATE: 22-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blank

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 10.0 g

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.1 | T4CDF - Total | ND | 0.1 |
| 2,3,7,8 | ND | 0.1 | 2,3,7,8 | ND | 0.1 |
| P5CDD - Total | ND | 0.1 | P5CDF - Total | ND | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | ND | 0.2 | H6CDF - Total | ND | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | ND | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | ND | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | ND | 0.2 | H7CDF - Total | ND | 0.2 |
| 1,2,3,4,6,7,8 | ND | 0.2 | 1,2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | ND | 0.5 | O8CDF - Total | ND | 0.5 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 74 |
| 13C-T4CDD | 74 |
| 13C-P5CDF | 75 |
| 13C-P5CDD | 75 |
| 13C-H6CDF | 90 |
| 13C-H6CDD | 92 |
| 13C-H7CDF | 84 |
| 13C-H7CDD | 76 |
| 13C-O8CDD | 80 |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McNamilton
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: Procedural Blank

AXYS FILE: DX-S-BLK 2047

CLIENT: Hatfield Consultants Ltd.

DATE: 22-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blank

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 10.0 g

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.1 | T4CDF - Total | ND | 0.1 |
| 2,3,7,8 | ND | 0.1 | 2,3,7,8 | ND | 0.1 |
| P5CDD - Total | ND | 0.1 | P5CDF - Total | ND | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | ND | 0.2 | H6CDF - Total | ND | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | ND | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | ND | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | ND | 0.2 | H7CDF - Total | ND | 0.2 |
| 1,2,3,4,6,7,8 | ND | 0.2 | 1,2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | 0.5 | 0.3 | O8CDF - Total | ND | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 90 |
| 13C-T4CDD | 98 |
| 13C-P5CDF | 90 |
| 13C-P5CDD | 92 |
| 13C-H6CDF | 110 |
| 13C-H6CDD | 110 |
| 13C-H7CDF | 100 |
| 13C-H7CDD | 85 |
| 13C-O8CDD | 80 |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McMillan
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: Procedural Blank

AXYS FILE: DX-S-BLK 2049

CLIENT: Hatfield Consultants Ltd.

DATE: 22/Apr/1999

CLIENT NO: 2607

SAMPLE TYPE: Blank

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 10.0 g

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.1 | T4CDF - Total | ND | 0.1 |
| 2,3,7,8 | ND | 0.1 | 2,3,7,8 | ND | 0.1 |
| P5CDD - Total | ND | 0.1 | P5CDF - Total | ND | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | ND | 0.2 | H6CDF - Total | ND | 0.3 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.3 |
| 1,2,3,6,7,8 | ND | 0.2 | 1,2,3,6,7,8 | ND | 0.3 |
| 1,2,3,7,8,9 | ND | 0.2 | 2,3,4,6,7,8 | ND | 0.3 |
| | | | 1,2,3,7,8,9 | ND | 0.3 |
| H7CDD - Total | ND | 0.4 | H7CDF - Total | ND | 0.3 |
| 1,2,3,4,6,7,8 | ND | 0.4 | 1,2,3,4,6,7,8 | ND | 0.3 |
| | | | 1,2,3,4,7,8,9 | ND | 0.3 |
| O8CDD - Total | 0.7 | 0.3 | O8CDF - Total | ND | 0.5 |

Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 93 |
| 13C-T4CDD | 110 |
| 13C-P5CDF | 85 |
| 13C-P5CDD | 83 |
| 13C-H6CDF | 81 |
| 13C-H6CDD | 86 |
| 13C-H7CDF | 78 |
| 13C-H7CDD | 65 |
| 13C-O8CDD | 66 |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McHamilton
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001

CLIENT SAMPLE I.D.: Procedural Blank

AXYS FILE: DX-S-BLK 2069

CLIENT: Hatfield Consultants

DATE: 13-May-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blank

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 10.0 g

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.1 | T4CDF - Total | ND | 0.1 |
| 2,3,7,8 | ND | 0.1 | 2,3,7,8 | ND | 0.1 |
| P5CDD - Total | ND | 0.1 | P5CDF - Total | ND | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | ND | 0.2 | H6CDF - Total | ND | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | ND | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | ND | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | ND | 0.2 | H7CDF - Total | ND | 0.2 |
| 1,2,3,4,6,7,8 | ND | 0.2 | 1,2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD - Total | ND | 0.3 | O8CDF - Total | ND | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 81 |
| 13C-T4CDD | 83 |
| 13C-P5CDF | 81 |
| 13C-P5CDD | 84 |
| 13C-H6CDF | 86 |
| 13C-H6CDD | 86 |
| 13C-H7CDF | 76 |
| 13C-H7CDD | 72 |
| 13C-O8CDD | 76 |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McNamilton
 Approved

Tissue Samples

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001A

| | | | |
|----------------------------|----------------------------------|--------------------------|------------------------|
| CLIENT SAMPLE I.D.: | Procedural Blank | AXYS FILE: | DX-T-BLK 3072 i |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 21-Aug-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-T-03/Ver.2 |
| SAMPLE TYPE: | Tissue | INSTRUMENT: | GC-HRMS |
| SAMPLE SIZE: | 5 g wet | CONCENTRATION IN: | pg/g |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | ND | 0.1 | T4CDF - Total | ND | 0.1 |
| 2,3,7,8 | ND | 0.1 | 2,3,7,8 | ND | 0.1 |
| P5CDD - Total | ND | 0.2 | P5CDF - Total | ND | 0.2 |
| 1,2,3,7,8 | ND | 0.2 | 1,2,3,7,8 | ND | 0.2 |
| | | | 2,3,4,7,8 | ND | 0.2 |
| H6CDD - Total | ND | 0.1 | H6CDF - Total | ND | 0.1 |
| 1,2,3,4,7,8 | ND | 0.1 | 1,2,3,4,7,8 | ND | 0.1 |
| 1,2,3,6,7,8 | ND | 0.1 | 1,2,3,6,7,8 | ND | 0.1 |
| 1,2,3,7,8,9 | ND | 0.1 | 2,3,4,6,7,8 | ND | 0.1 |
| | | | 1,2,3,7,8,9 | ND | 0.1 |
| H7CDD - Total | 0.5 | 0.2 | H7CDF - Total | ND | 0.2 |
| 1,2,3,4,6,7,8 | 0.2 | 0.2 | 1,2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD | 2.0 | 0.2 | O8CDF | ND | 0.2 |


Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 68 |
| 13C-T4CDD | 75 |
| 13C-P5CDF | 75 |
| 13C-P5CDD | 65 |
| 13C-H6CDF | 74 |
| 13C-H6CDD | 81 |
| 13C-H7CDF | 66 |
| 13C-H7CDD | 63 |
| 13C-O8CDD | 71 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

2,3,7,8 - TCDD TEQs (ND=1/2 DL) = 0.201 pg/g
 2,3,7,8 - TCDD TEQs (ND=0) = 0.004 pg/g

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: Lab Blank

AXYS FILE: DX-T-BLK 3073 i2

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Aug-1999

CLIENT NO.: 2607

REVISED: 17-Sep-1999

SAMPLE TYPE: Blank

METHOD NO.: DX-T-03/Ver.2

SAMPLE SIZE: 5.00 g

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.2 | T4CDF - Total | ND | 0.2 |
| 2,3,7,8 | ND | 0.2 | 2,3,7,8 | ND | 0.2 |
| P5CDD - Total | ND | 0.2 | P5CDF - Total | ND | 0.2 |
| 1,2,3,7,8 | ND | 0.2 | 1,2,3,7,8 | ND | 0.2 |
| | | | 2,3,4,7,8 | ND | 0.2 |
| H6CDD - Total | ND | 0.2 | H6CDF - Total | ND | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | ND | 0.2 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | ND | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 0.4 | 0.3 | H7CDF - Total | ND | 0.3 |
| 1,2,3,4,6,7,8 | ND | 0.3 | 1,2,3,4,6,7,8 | ND | 0.3 |
| | | | 1,2,3,4,7,8,9 | ND | 0.3 |
| O8CDD | 2.0 | 0.5 | O8CDF | ND | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 57 |
| 13C-T4CDD | 54 |
| 13C-P5CDF | 53 |
| 13C-P5CDD | 54 |
| 13C-H6CDF | 66 |
| 13C-H6CDD | 64 |
| 13C-H7CDF | 54 |
| 13C-H7CDD | 46 |
| 13C-O8CDD | 36 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.29 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.00 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001A

| | |
|--|----------------------------------|
| CLIENT SAMPLE I.D.: Lab Blank | AXYS FILE: T-BLK 3074 i2 |
| CLIENT: Hatfield Consultants Ltd. | DATE: 28-Aug-1999 |
| CLIENT NO.: 2607 | METHOD NO.: DX-T-03/Ver.2 |
| SAMPLE TYPE: Blank | INSTRUMENT: GC-HRMS |
| SAMPLE SIZE: 3.00 g | CONCENTRATION IN: pg/g |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | 0.1 | 0.1 | T4CDF - Total | ND | 0.1 |
| 2,3,7,8 | ND | 0.1 | 2,3,7,8 | ND | 0.1 |
| P5CDD - Total | ND | 0.1 | P5CDF - Total | ND | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | ND | 0.1 | H6CDF - Total | 0.2 | 0.1 |
| 1,2,3,4,7,8 | ND | 0.1 | 1,2,3,4,7,8 | 0.1 | 0.1 |
| 1,2,3,6,7,8 | ND | 0.1 | 1,2,3,6,7,8 | ND | 0.1 |
| 1,2,3,7,8,9 | ND | 0.1 | 2,3,4,6,7,8 | ND | 0.1 |
| | | | 1,2,3,7,8,9 | ND | 0.1 |
| H7CDD - Total | ND | 0.1 | H7CDF - Total | ND | 0.1 |
| 1,2,3,4,6,7,8 | NDR(0.2) | 0.1 | 1,2,3,4,6,7,8 | NDR(0.1) | 0.1 |
| | | | 1,2,3,4,7,8,9 | NDR(0.1) | 0.1 |
| O8CDD | 0.9 | 0.1 | O8CDF | 0.2 | 0.1 |

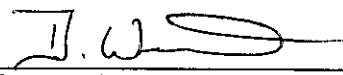
Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 72 |
| 13C-T4CDD | 77 |
| 13C-P5CDF | 73 |
| 13C-P5CDD | 85 |
| 13C-H6CDF | 83 |
| 13C-H6CDD | 81 |
| 13C-H7CDF | 73 |
| 13C-H7CDD | 73 |
| 13C-O8CDD | 77 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

2,3,7,8 - TCDD TEQs (ND=1/2 DL) = 0.2 pg/g
 2,3,7,8 - TCDD TEQs (ND=0) = 0.0 pg/g

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


Approved

Milk Samples

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001A

CLIENT SAMPLE I.D.: Lab Blank

AXYS FILE: DX-T-BLK 3074 i2

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Aug-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blank

METHOD NO.: DX-T-03/Ver.2

SAMPLE SIZE: 10.0 g

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.1 | T4CDF - Total | ND | 0.1 |
| 2,3,7,8 | ND | 0.1 | 2,3,7,8 | ND | 0.1 |
| P5CDD - Total | ND | 0.1 | P5CDF - Total | ND | 0.1 |
| 1,2,3,7,8 | ND | 0.1 | 1,2,3,7,8 | ND | 0.1 |
| | | | 2,3,4,7,8 | ND | 0.1 |
| H6CDD - Total | ND | 0.1 | H6CDF - Total | ND | 0.1 |
| 1,2,3,4,7,8 | ND | 0.1 | 1,2,3,4,7,8 | ND | 0.1 |
| 1,2,3,6,7,8 | ND | 0.1 | 1,2,3,6,7,8 | ND | 0.1 |
| 1,2,3,7,8,9 | ND | 0.1 | 2,3,4,6,7,8 | ND | 0.1 |
| | | | 1,2,3,7,8,9 | ND | 0.1 |
| H7CDD - Total | ND | 0.1 | H7CDF - Total | ND | 0.1 |
| 1,2,3,4,6,7,8 | NDR(0.1) | 0.1 | 1,2,3,4,6,7,8 | ND | 0.1 |
| | | | 1,2,3,4,7,8,9 | ND | 0.1 |
| O8CDD | 0.3 | 0.1 | O8CDF | 0.1 | 0.1 |

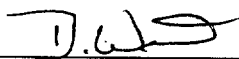
Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 72 |
| 13C-T4CDD | 77 |
| 13C-P5CDF | 73 |
| 13C-P5CDD | 85 |
| 13C-H6CDF | 83 |
| 13C-H6CDD | 81 |
| 13C-H7CDF | 73 |
| 13C-H7CDD | 73 |
| 13C-O8CDD | 77 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.14 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.00 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

| | | | |
|---------------------|---------------------------|-------------------|---------------|
| CLIENT SAMPLE I.D.: | Procedural Blank | AXYS FILE: | WG2028-1 |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 03-Nov-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-T-03/Ver.2 |
| SAMPLE TYPE: | Blank | INSTRUMENT: | GC-HRMS |
| SAMPLE SIZE: | 3.00 g | | |
| % MOISTURE: | N/A | % LIPID: | N/A |
| | | CONCENTRATION IN: | pg/g |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.2 | T4CDF - Total | ND | 0.2 |
| 2,3,7,8 | ND | 0.2 | 2,3,7,8 | ND | 0.2 |
| P5CDD - Total | ND | 0.4 | P5CDF - Total | ND | 0.6 |
| 1,2,3,7,8 | ND | 0.4 | 1,2,3,7,8 | ND | 0.6 |
| | | | 2,3,4,7,8 | ND | 0.6 |
| H6CDD - Total | 3.1 | 0.1 | H6CDF - Total | ND | 0.4 |
| 1,2,3,4,7,8 | ND | 0.1 | 1,2,3,4,7,8 | ND | 0.4 |
| 1,2,3,6,7,8 | NDR(0.1) | 0.1 | 1,2,3,6,7,8 | ND | 0.4 |
| 1,2,3,7,8,9 | 0.51 | 0.1 | 2,3,4,6,7,8 | ND | 0.4 |
| | | | 1,2,3,7,8,9 | ND | 0.4 |
| H7CDD - Total | 0.9 | 0.3 | H7CDF - Total | ND | 0.4 |
| 1,2,3,4,6,7,8 | 0.9 | 0.3 | 1,2,3,4,6,7,8 | ND | 0.4 |
| | | | 1,2,3,4,7,8,9 | ND | 0.4 |
| O8CDD | NDR(2.2) | 0.3 | O8CDF | NDR(0.5) | 0.4 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 83 |
| 13C-T4CDD | 83 |
| 13C-P5CDF | 76 |
| 13C-P5CDD | 79 |
| 13C-H6CDF | 92 |
| 13C-H6CDD | 86 |
| 13C-H7CDF | 83 |
| 13C-H7CDD | 82 |
| 13C-O8CDD | 78 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.53 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.06 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: Lab Blank

AXYS FILE: WG2079-1

CLIENT: Hatfield Consultants Ltd.

DATE: 03-Dec-1999

CLIENT NO.: 2607

SAMPLE TYPE: Oil

METHOD NO.: DX-P-01/Ver.2

SAMPLE SIZE: 20 g

INSTRUMENT: GC-HRMS

% MOISTURE: N/A

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.01 | T4CDF - Total | ND | 0.01 |
| 2,3,7,8 | ND | 0.01 | 2,3,7,8 | ND | 0.01 |
| P5CDD - Total | ND | 0.01 | P5CDF - Total | ND | 0.01 |
| 1,2,3,7,8 | ND | 0.01 | 1,2,3,7,8 | ND | 0.01 |
| | | | 2,3,4,7,8 | ND | 0.01 |
| H6CDD - Total | ND | 0.01 | H6CDF - Total | ND | 0.01 |
| 1,2,3,4,7,8 | ND | 0.01 | 1,2,3,4,7,8 | NDR(0.02) | 0.01 |
| 1,2,3,6,7,8 | ND | 0.01 | 1,2,3,6,7,8 | ND | 0.01 |
| 1,2,3,7,8,9 | ND | 0.01 | 2,3,4,6,7,8 | ND | 0.01 |
| | | | 1,2,3,7,8,9 | ND | 0.01 |
| H7CDD - Total | ND | 0.01 | H7CDF - Total | ND | 0.01 |
| 1,2,3,4,6,7,8 | NDR(0.02) | 0.01 | 1,2,3,4,6,7,8 | ND | 0.01 |
| | | | 1,2,3,4,7,8,9 | ND | 0.01 |
| O8CDD | NDR(0.1) | 0.01 | O8CDF | NDR(0.01) | 0.01 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 83 |
| 13C-T4CDD | 89 |
| 13C-P5CDF | 79 |
| 13C-P5CDD | 78 |
| 13C-H6CDF | 85 |
| 13C-H6CDD | 81 |
| 13C-H7CDF | 85 |
| 13C-H7CDD | 88 |
| 13C-O8CDD | 93 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.015 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.000 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001B

| | | | |
|----------------------------|----------------------------------|--------------------------|----------------------|
| CLIENT SAMPLE I.D.: | LAB BLANK | AXYS FILE: | WG2294-1 |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 28-Dec-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-T-03/Ver.2 |
| SAMPLE TYPE: | Blank | INSTRUMENT: | GC-HRMS |
| SAMPLE SIZE: | 3.00 g | CONCENTRATION IN: | pg/g |
| % LIPID: | N/A | % MOISTURE: | N/A |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | ND | 0.07 | T4CDF - Total | ND | 0.03 |
| 2,3,7,8 | ND | 0.07 | 2,3,7,8 | NDR(0.05) | 0.03 |
| P5CDD - Total | ND | 0.04 | P5CDF - Total | ND | 0.06 |
| 1,2,3,7,8 | ND | 0.04 | 1,2,3,7,8 | ND | 0.06 |
| | | | 2,3,4,7,8 | ND | 0.06 |
| H6CDD - Total | ND | 0.07 | H6CDF - Total | 0.16 | 0.07 |
| 1,2,3,4,7,8 | ND | 0.07 | 1,2,3,4,7,8 | 0.16 | 0.07 |
| 1,2,3,6,7,8 | ND | 0.07 | 1,2,3,6,7,8 | ND | 0.07 |
| 1,2,3,7,8,9 | ND | 0.07 | 2,3,4,6,7,8 | ND | 0.07 |
| | | | 1,2,3,7,8,9 | ND | 0.07 |
| H7CDD - Total | ND | 0.04 | H7CDF - Total | ND | 0.05 |
| 1,2,3,4,6,7,8 | ND | 0.04 | 1,2,3,4,6,7,8 | NDR(0.11) | 0.05 |
| | | | 1,2,3,4,7,8,9 | ND | 0.05 |
| O8CDD | NDR(0.66) | 0.11 | O8CDF | NDR(0.25) | 0.14 |

Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 75 |
| 13C-T4CDD | 75 |
| 13C-P5CDF | 59 |
| 13C-P5CDD | 63 |
| 13C-H6CDF | 75 |
| 13C-H6CDD | 74 |
| 13C-H7CDF | 61 |
| 13C-H7CDD | 61 |
| 13C-O8CDD | 58 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.101 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.016 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: PROCEDURAL BLANK

AXYS FILE: WG1918-1 i

CLIENT: Hatfield Consultants
 CLIENT NO.: 2607
 SAMPLE TYPE: N/A

DATE: 17-Sep-1999
 REVISED: 05-Oct-1999
 METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 20.0 g

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.01 | T4CDF - Total | 0.04 | 0.01 |
| 2,3,7,8 | ND | 0.01 | 2,3,7,8 | 0.01 | 0.01 |
| P5CDD - Total | ND | 0.01 | P5CDF - Total | ND | 0.01 |
| 1,2,3,7,8 | ND | 0.01 | 1,2,3,7,8 | ND | 0.01 |
| | | | 2,3,4,7,8 | ND | 0.01 |
| H6CDD - Total | ND | 0.01 | H6CDF - Total | 0.03 | 0.01 |
| 1,2,3,4,7,8 | ND | 0.01 | 1,2,3,4,7,8 | 0.03 | 0.01 |
| 1,2,3,6,7,8 | ND | 0.01 | 1,2,3,6,7,8 | NDR(0.01) | 0.01 |
| 1,2,3,7,8,9 | ND | 0.01 | 2,3,4,6,7,8 | ND | 0.01 |
| | | | 1,2,3,7,8,9 | ND | 0.01 |
| H7CDD - Total | 0.03 | 0.01 | H7CDF - Total | ND | 0.01 |
| 1,2,3,4,6,7,8 | 0.02 | 0.01 | 1,2,3,4,6,7,8 | NDR(0.01) | 0.01 |
| | | | 1,2,3,4,7,8,9 | ND | 0.01 |
| O8CDD | NDR(0.07) | 0.01 | O8CDF | NDR(0.03) | 0.01 |

Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 83 |
| 13C-T4CDD | 88 |
| 13C-P5CDF | 87 |
| 13C-P5CDD | 91 |
| 13C-H6CDF | 96 |
| 13C-H6CDD | 94 |
| 13C-H7CDF | 94 |
| 13C-H7CDD | 93 |
| 13C-O8CDD | 100 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.017 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.004 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved _____

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001A

CLIENT SAMPLE I.D.: PROCEDURAL BLANK

AXYS FILE: WG1918-1 i

CLIENT: Hatfield Consultants

DATE: 30-Sep-1999

CLIENT NO.: 2607

REVISED: 06-Oct-1999

SAMPLE TYPE: N/A

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 1 g lipid

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.2 | T4CDF - Total | 0.8 | 0.2 |
| 2,3,7,8 | ND | 0.2 | 2,3,7,8 | 0.2 | 0.2 |
| P5CDD - Total | ND | 0.2 | P5CDF - Total | ND | 0.2 |
| 1,2,3,7,8 | ND | 0.2 | 1,2,3,7,8 | ND | 0.2 |
| | | | 2,3,4,7,8 | ND | 0.2 |
| H6CDD - Total | ND | 0.2 | H6CDF - Total | 0.5 | 0.2 |
| 1,2,3,4,7,8 | ND | 0.2 | 1,2,3,4,7,8 | 0.5 | 0.2 |
| 1,2,3,6,7,8 | ND | 0.2 | 1,2,3,6,7,8 | NDR(0.2) | 0.2 |
| 1,2,3,7,8,9 | ND | 0.2 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | 0.6 | 0.2 | H7CDF - Total | ND | 0.2 |
| 1,2,3,4,6,7,8 | 0.3 | 0.2 | 1,2,3,4,6,7,8 | NDR(0.2) | 0.2 |
| | | | 1,2,3,4,7,8,9 | ND | 0.2 |
| O8CDD | NDR(1.4) | 0.2 | O8CDF | NDR(0.6) | 0.2 |

Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 83 |
| 13C-T4CDD | 88 |
| 13C-P5CDF | 87 |
| 13C-P5CDD | 91 |
| 13C-H6CDF | 96 |
| 13C-H6CDD | 94 |
| 13C-H7CDF | 94 |
| 13C-H7CDD | 93 |
| 13C-O8CDD | 100 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-----------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.34 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.08 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.



 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: Lab Blank

AXYS FILE: WG1919-1

CLIENT: Hatfield Consultants Ltd.

DATE: 14-Sept-1999

CLIENT NO.: 2607

REVISED: 06-Oct-1999

SAMPLE TYPE: Blank

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 25.0 g

INSTRUMENT: GC-HRMS

% LIPID: N/A

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.01 | T4CDF - Total | ND | 0.01 |
| 2,3,7,8 | ND | 0.01 | 2,3,7,8 | ND | 0.01 |
| P5CDD - Total | ND | 0.01 | P5CDF - Total | ND | 0.01 |
| 1,2,3,7,8 | ND | 0.01 | 1,2,3,7,8 | ND | 0.01 |
| | | | 2,3,4,7,8 | ND | 0.01 |
| H6CDD - Total | ND | 0.01 | H6CDF - Total | ND | 0.01 |
| 1,2,3,4,7,8 | ND | 0.01 | 1,2,3,4,7,8 | NDR(0.01) | 0.01 |
| 1,2,3,6,7,8 | ND | 0.01 | 1,2,3,6,7,8 | ND | 0.01 |
| 1,2,3,7,8,9 | ND | 0.01 | 2,3,4,6,7,8 | ND | 0.01 |
| | | | 1,2,3,7,8,9 | ND | 0.01 |
| H7CDD - Total | ND | 0.01 | H7CDF - Total | ND | 0.01 |
| 1,2,3,4,6,7,8 | NDR(0.02) | 0.01 | 1,2,3,4,6,7,8 | ND | 0.01 |
| | | | 1,2,3,4,7,8,9 | ND | 0.01 |
| O8CDD | 0.04 | 0.01 | O8CDF | ND | 0.01 |

Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 77 |
| 13C-T4CDD | 81 |
| 13C-P5CDF | 89 |
| 13C-P5CDD | 100 |
| 13C-H6CDF | 95 |
| 13C-H6CDD | 97 |
| 13C-H7CDF | 93 |
| 13C-H7CDD | 92 |
| 13C-O8CDD | 96 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.014 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.000 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

McLamilton
 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

DX001A

CLIENT SAMPLE I.D.: Lab Blank

AXYS FILE: WG1919-1

CLIENT: Hatfield Consultants Ltd.

DATE: 30-Sept-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blank

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 1 g lipid

INSTRUMENT: GC-HRMS

% LIPID: N/A

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.3 | T4CDF - Total | ND | 0.3 |
| 2,3,7,8 | ND | 0.3 | 2,3,7,8 | ND | 0.3 |
| P5CDD - Total | ND | 0.3 | P5CDF - Total | ND | 0.3 |
| 1,2,3,7,8 | ND | 0.3 | 1,2,3,7,8 | ND | 0.3 |
| | | | 2,3,4,7,8 | ND | 0.3 |
| H6CDD - Total | ND | 0.3 | H6CDF - Total | ND | 0.3 |
| 1,2,3,4,7,8 | ND | 0.3 | 1,2,3,4,7,8 | NDR(0.3) | 0.3 |
| 1,2,3,6,7,8 | ND | 0.3 | 1,2,3,6,7,8 | ND | 0.3 |
| 1,2,3,7,8,9 | ND | 0.3 | 2,3,4,6,7,8 | ND | 0.3 |
| | | | 1,2,3,7,8,9 | ND | 0.3 |
| H7CDD - Total | ND | 0.3 | H7CDF - Total | ND | 0.3 |
| 1,2,3,4,6,7,8 | NDR(0.5) | 0.3 | 1,2,3,4,6,7,8 | ND | 0.3 |
| | | | 1,2,3,4,7,8,9 | ND | 0.3 |
| O8CDD | 1.1 | 0.3 | O8CDF | ND | 0.3 |


Surrogate Standards % Recovery

| | |
|-----------|-----|
| 13C-T4CDF | 77 |
| 13C-T4CDD | 81 |
| 13C-P5CDF | 89 |
| 13C-P5CDD | 100 |
| 13C-H6CDF | 95 |
| 13C-H6CDD | 97 |
| 13C-H7CDF | 93 |
| 13C-H7CDD | 92 |
| 13C-O8CDD | 96 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.361 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.001 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001B

| | | | |
|----------------------------|----------------------------------|--------------------------|----------------------|
| CLIENT SAMPLE I.D.: | LAB BLANK | AXYS FILE: | WG2217-1 i |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 21-Dec-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-M-04/Ver.3 |
| SAMPLE TYPE: | Blank | INSTRUMENT: | GC-HRMS |
| SAMPLE SIZE: | 20 g | CONCENTRATION IN: | pg/g |
| % LIPID: | N/A | | |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | ND | 0.005 | T4CDF - Total | 0.015 | 0.005 |
| 2,3,7,8 | NDR(0.006) | 0.005 | 2,3,7,8 | 0.015 | 0.005 |
| P5CDD - Total | ND | 0.005 | P5CDF - Total | 0.010 | 0.005 |
| 1,2,3,7,8 | NDR(0.009) | 0.005 | 1,2,3,7,8 | NDR(0.013) | 0.005 |
| | | | 2,3,4,7,8 | 0.010 | 0.005 |
| H6CDD - Total | 0.0080 | 0.005 | H6CDF - Total | 0.058 | 0.005 |
| 1,2,3,4,7,8 | ND | 0.005 | 1,2,3,4,7,8 | 0.040 | 0.005 |
| 1,2,3,6,7,8 | NDR(0.005) | 0.005 | 1,2,3,6,7,8 | 0.010 | 0.005 |
| 1,2,3,7,8,9 | NDR(0.008) | 0.005 | 2,3,4,6,7,8 | NDR(0.007) | 0.005 |
| | | | 1,2,3,7,8,9 | ND | 0.005 |
| H7CDD - Total | ND | 0.005 | H7CDF - Total | 0.056 | 0.005 |
| 1,2,3,4,6,7,8 | NDR(0.014) | 0.005 | 1,2,3,4,6,7,8 | 0.018 | 0.005 |
| | | | 1,2,3,4,7,8,9 | 0.019 | 0.005 |
| O8CDD | 0.066 | 0.005 | O8CDF | NDR(0.056) | 0.005 |

Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 90 |
| 13C-T4CDD | 92 |
| 13C-P5CDF | 84 |
| 13C-P5CDD | 88 |
| 13C-H6CDF | 91 |
| 13C-H6CDD | 91 |
| 13C-H7CDF | 81 |
| 13C-H7CDD | 81 |
| 13C-O8CDD | 79 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

2,3,7,8 - TCDD TEQs (ND=1/2 DL) = 0.0171 pg/g
 2,3,7,8 - TCDD TEQs (ND=0) = 0.0119 pg/g

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.



Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001B

CLIENT SAMPLE I.D.: LAB BLANK

AXYS FILE: WG2217-1 i

CLIENT: Hatfield Consultants Ltd.

DATE: 21-Dec-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blank

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 1.0 g (lipid)

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|--|--------------------------------------|------------------------------|---|--|--------------------------------------|
| T4CDD - Total 2,3,7,8 | ND NDR(0.12) | 0.10 0.10 | T4CDF - Total 2,3,7,8 | 0.30 0.30 | 0.10 0.10 |
| P5CDD - Total 1,2,3,7,8 | ND NDR(0.18) | 0.10 0.10 | P5CDF - Total 1,2,3,7,8 2,3,4,7,8 | 0.20 NDR(0.26) 0.20 | 0.10 0.10 0.10 |
| H6CDD - Total 1,2,3,4,7,8 1,2,3,6,7,8 1,2,3,7,8,9 | 0.16 ND NDR(0.10) NDR(0.16) | 0.10 0.10 0.10 0.10 | H6CDF - Total 1,2,3,4,7,8 1,2,3,6,7,8 2,3,4,6,7,8 1,2,3,7,8,9 | 1.2 0.80 0.20 NDR(0.14) ND | 0.10 0.10 0.10 0.10 0.10 |
| H7CDD - Total 1,2,3,4,6,7,8 | ND NDR(0.28) | 0.10 0.10 | H7CDF - Total 1,2,3,4,6,7,8 1,2,3,4,7,8,9 | 1.1 0.36 0.38 | 0.10 0.10 0.10 |
| O8CDD | 1.3 | 0.10 | O8CDF | NDR(1.1) | 0.10 |


Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 90 |
| 13C-T4CDD | 92 |
| 13C-P5CDF | 84 |
| 13C-P5CDD | 88 |
| 13C-H6CDF | 91 |
| 13C-H6CDD | 91 |
| 13C-H7CDF | 81 |
| 13C-H7CDD | 81 |
| 13C-O8CDD | 79 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.342 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.239 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001B

| | | | |
|----------------------------|----------------------------------|--------------------------|----------------------|
| CLIENT SAMPLE I.D.: | LAB BLANK | AXYS FILE: | WG2640-101 i |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 16-MAR-2000 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-M-04/Ver.3 |
| SAMPLE TYPE: | Blank | INSTRUMENT: | GC-HRMS |
| SAMPLE SIZE: | 20.0 g | CONCENTRATION IN: | pg/g |
| % LIPID: | N/A | | |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|----------------------|---------------|-------|----------------------|---------------|-------|
| T4CDD - Total | ND | 0.070 | T4CDF - Total | ND | 0.040 |
| 2,3,7,8 | ND | 0.070 | 2,3,7,8 | ND | 0.040 |
| P5CDD - Total | ND | 0.060 | P5CDF - Total | ND | 0.060 |
| 1,2,3,7,8 | ND | 0.060 | 1,2,3,7,8 | ND | 0.060 |
| | | | 2,3,4,7,8 | ND | 0.060 |
| H6CDD - Total | ND | 0.10 | H6CDF - Total | ND | 0.10 |
| 1,2,3,4,7,8 | ND | 0.10 | 1,2,3,4,7,8 | ND | 0.10 |
| 1,2,3,6,7,8 | ND | 0.10 | 1,2,3,6,7,8 | ND | 0.10 |
| 1,2,3,7,8,9 | ND | 0.10 | 2,3,4,6,7,8 | ND | 0.10 |
| | | | 1,2,3,7,8,9 | ND | 0.10 |
| H7CDD - Total | ND | 0.090 | H7CDF - Total | ND | 0.080 |
| 1,2,3,4,6,7,8 | ND | 0.090 | 1,2,3,4,6,7,8 | ND | 0.080 |
| | | | 1,2,3,4,7,8,9 | ND | 0.080 |
| O8CDD | NDR(0.058) | 0.050 | O8CDF | ND | 0.090 |


Surrogate Standards % Recovery

| | |
|------------------|----|
| 13C-T4CDF | 87 |
| 13C-T4CDD | 89 |
| 13C-P5CDF | 84 |
| 13C-P5CDD | 96 |
| 13C-H6CDF | 96 |
| 13C-H6CDD | 93 |
| 13C-H7CDF | 81 |
| 13C-H7CDD | 80 |
| 13C-O8CDD | 83 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|-------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.105 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.000 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001B

CLIENT SAMPLE I.D.: LAB BLANK

AXYS FILE: WG2640-101 i

CLIENT: Hatfield Consultants Ltd.

DATE: 16-MAR-2000

CLIENT NO.: 2607

SAMPLE TYPE: Blank

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 1.00 g (lipid)

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 1.4 | T4CDF - Total | ND | 0.80 |
| 2,3,7,8 | ND | 1.4 | 2,3,7,8 | ND | 0.80 |
| P5CDD - Total | ND | 1.2 | P5CDF - Total | ND | 1.2 |
| 1,2,3,7,8 | ND | 1.2 | 1,2,3,7,8 | ND | 1.2 |
| | | | 2,3,4,7,8 | ND | 1.2 |
| H6CDD - Total | ND | 2.0 | H6CDF - Total | ND | 2.0 |
| 1,2,3,4,7,8 | ND | 2.0 | 1,2,3,4,7,8 | ND | 2.0 |
| 1,2,3,6,7,8 | ND | 2.0 | 1,2,3,6,7,8 | ND | 2.0 |
| 1,2,3,7,8,9 | ND | 2.0 | 2,3,4,6,7,8 | ND | 2.0 |
| | | | 1,2,3,7,8,9 | ND | 2.0 |
| H7CDD - Total | ND | 1.8 | H7CDF - Total | ND | 1.6 |
| 1,2,3,4,6,7,8 | ND | 1.8 | 1,2,3,4,6,7,8 | ND | 1.6 |
| | | | 1,2,3,4,7,8,9 | ND | 1.6 |
| O8CDD | ND | 1.0 | O8CDF | ND | 1.8 |

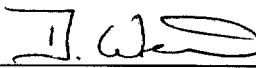
Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 87 |
| 13C-T4CDD | 89 |
| 13C-P5CDF | 84 |
| 13C-P5CDD | 96 |
| 13C-H6CDF | 96 |
| 13C-H6CDD | 93 |
| 13C-H7CDF | 81 |
| 13C-H7CDD | 80 |
| 13C-O8CDD | 83 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | | |
|-----------------------------------|------|------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 2.1 | pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.00 | pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


Approved

Blood Samples

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

CLIENT SAMPLE I.D.: Procedural Blank

AXYS FILE: WG1931-1 L

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Oct-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blank

METHOD NO.: DX-B-06/Ver.1

SAMPLE SIZE: 50.0 g

INSTRUMENT GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.010 | T4CDF - Total | ND | 0.008 |
| 2,3,7,8 | ND | 0.010 | 2,3,7,8 | ND | 0.008 |
| P5CDD - Total | ND | 0.005 | P5CDF - Total | ND | 0.005 |
| 1,2,3,7,8 | ND | 0.005 | 1,2,3,7,8 | ND | 0.005 |
| | | | 2,3,4,7,8 | ND | 0.005 |
| H6CDD - Total | ND | 0.005 | H6CDF - Total | ND | 0.005 |
| 1,2,3,4,7,8 | ND | 0.005 | 1,2,3,4,7,8 | ND | 0.005 |
| 1,2,3,6,7,8 | ND | 0.005 | 1,2,3,6,7,8 | ND | 0.005 |
| 1,2,3,7,8,9 | ND | 0.005 | 2,3,4,6,7,8 | NDR(0.007) | 0.005 |
| | | | 1,2,3,7,8,9 | ND | 0.005 |
| H7CDD - Total | 0.022 | 0.005 | H7CDF - Total | ND | 0.005 |
| 1,2,3,4,6,7,8 | 0.011 | 0.005 | 1,2,3,4,6,7,8 | NDR(0.006) | 0.005 |
| | | | 1,2,3,4,7,8,9 | ND | 0.005 |
| O8CDD | 0.049 | 0.005 | O8CDF | 0.008 | 0.005 |


Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 60 |
| 13C-T4CDD | 66 |
| 13C-P5CDF | 81 |
| 13C-P5CDD | 85 |
| 13C-H6CDF | 88 |
| 13C-H6CDD | 83 |
| 13C-H7CDF | 67 |
| 13C-H7CDD | 63 |
| 13C-O8CDD | 65 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

| | |
|-----------------------------------|-------------|
| 2,3,7,8 - TCDD TEQs (ND=1/2 DL) = | 0.0100 pg/g |
| 2,3,7,8 - TCDD TEQs (ND=0) = | 0.0002 pg/g |

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

Approved 

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

| | | | |
|---------------------|---------------------------|-------------------|---------------|
| CLIENT SAMPLE I.D.: | Procedural Blank | AXYS FILE: | WG1931-1 L |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 28-Oct-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-B-06/Ver.1 |
| SAMPLE TYPE: | Blank | INSTRUMENT: | GC-HRMS |
| SAMPLE SIZE: | 1.0 g lipid | CONCENTRATION IN: | pg/g |
| % LIPID: | N/A | | |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.5 | T4CDF - Total | ND | 0.4 |
| 2,3,7,8 | ND | 0.5 | 2,3,7,8 | ND | 0.4 |
| P5CDD - Total | ND | 0.3 | P5CDF - Total | ND | 0.3 |
| 1,2,3,7,8 | ND | 0.3 | 1,2,3,7,8 | ND | 0.3 |
| | | | 2,3,4,7,8 | ND | 0.3 |
| H6CDD - Total | ND | 0.3 | H6CDF - Total | ND | 0.3 |
| 1,2,3,4,7,8 | ND | 0.3 | 1,2,3,4,7,8 | ND | 0.3 |
| 1,2,3,6,7,8 | ND | 0.3 | 1,2,3,6,7,8 | ND | 0.3 |
| 1,2,3,7,8,9 | ND | 0.3 | 2,3,4,6,7,8 | NDR(0.4) | 0.3 |
| | | | 1,2,3,7,8,9 | ND | 0.3 |
| H7CDD - Total | 1.1 | 0.3 | H7CDF - Total | ND | 0.3 |
| 1,2,3,4,6,7,8 | 0.6 | 0.3 | 1,2,3,4,6,7,8 | NDR(0.3) | 0.3 |
| | | | 1,2,3,4,7,8,9 | ND | 0.3 |
| O8CDD | 2.5 | 0.3 | O8CDF | 0.4 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 60 |
| 13C-T4CDD | 66 |
| 13C-P5CDF | 81 |
| 13C-P5CDD | 85 |
| 13C-H6CDF | 88 |
| 13C-H6CDD | 83 |
| 13C-H7CDF | 67 |
| 13C-H7CDD | 63 |
| 13C-O8CDD | 65 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

2,3,7,8 - TCDD TEQs (ND=1/2 DL) = 0.50 pg/g

2,3,7,8 - TCDD TEQs (ND=0) = 0.01 pg/g

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

| | | | |
|---------------------|---------------------------|-------------------|---------------|
| CLIENT SAMPLE I.D.: | Procedural Blank | AXYS FILE: | WG1949-1 |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 28-Oct-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-B-06/Ver.1 |
| SAMPLE TYPE: | Blank | INSTRUMENT: | GC-HRMS |
| SAMPLE SIZE: | 30.0 g | CONCENTRATION IN: | pg/g |
| % LIPID: | N/A | | |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.007 | T4CDF - Total | 0.005 | 0.005 |
| 2,3,7,8 | ND | 0.007 | 2,3,7,8 | NDR(0.005) | 0.005 |
| P5CDD - Total | ND | 0.005 | P5CDF - Total | ND | 0.005 |
| 1,2,3,7,8 | ND | 0.005 | 1,2,3,7,8 | ND | 0.005 |
| | | | 2,3,4,7,8 | ND | 0.005 |
| H6CDD - Total | ND | 0.009 | H6CDF - Total | ND | 0.008 |
| 1,2,3,4,7,8 | ND | 0.009 | 1,2,3,4,7,8 | ND | 0.008 |
| 1,2,3,6,7,8 | ND | 0.009 | 1,2,3,6,7,8 | ND | 0.008 |
| 1,2,3,7,8,9 | ND | 0.009 | 2,3,4,6,7,8 | ND | 0.008 |
| | | | 1,2,3,7,8,9 | ND | 0.008 |
| H7CDD - Total | ND | 0.009 | H7CDF - Total | ND | 0.016 |
| 1,2,3,4,6,7,8 | NDR(0.032) | 0.009 | 1,2,3,4,6,7,8 | ND | 0.016 |
| | | | 1,2,3,4,7,8,9 | ND | 0.016 |
| O8CDD | 0.20 | 0.009 | O8CDF | 0.012 | 0.009 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 78 |
| 13C-T4CDD | 81 |
| 13C-P5CDF | 74 |
| 13C-P5CDD | 75 |
| 13C-H6CDF | 89 |
| 13C-H6CDD | 86 |
| 13C-H7CDF | 83 |
| 13C-H7CDD | 83 |
| 13C-O8CDD | 89 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

2,3,7,8 - TCDD TEQs (ND=1/2 DL) = 0.00974 pg/g
 2,3,7,8 - TCDD TEQs (ND=0) = 0.00021 pg/g

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

DX001A

| | | | |
|---------------------|---------------------------|-------------------|---------------|
| CLIENT SAMPLE I.D.: | Procedural Blank | AXYS FILE: | WG1949-1 |
| CLIENT: | Hatfield Consultants Ltd. | DATE: | 28-Oct-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | DX-B-06/Ver.1 |
| SAMPLE TYPE: | Blank | INSTRUMENT: | GC-HRMS |
| SAMPLE SIZE: | 1.0 g | CONCENTRATION IN: | pg/g |
| % LIPID: | N/A | | |

| Dioxins | Concentration | (SDL) | Furans | Concentration | (SDL) |
|---------------|---------------|-------|---------------|---------------|-------|
| T4CDD - Total | ND | 0.2 | T4CDF - Total | 0.2 | 0.2 |
| 2,3,7,8 | ND | 0.2 | 2,3,7,8 | NDR(0.2) | 0.2 |
| P5CDD - Total | ND | 0.2 | P5CDF - Total | ND | 0.2 |
| 1,2,3,7,8 | ND | 0.2 | 1,2,3,7,8 | ND | 0.2 |
| | | | 2,3,4,7,8 | ND | 0.2 |
| H6CDD - Total | ND | 0.3 | H6CDF - Total | ND | 0.2 |
| 1,2,3,4,7,8 | ND | 0.3 | 1,2,3,4,7,8 | ND | 0.2 |
| 1,2,3,6,7,8 | ND | 0.3 | 1,2,3,6,7,8 | ND | 0.2 |
| 1,2,3,7,8,9 | ND | 0.3 | 2,3,4,6,7,8 | ND | 0.2 |
| | | | 1,2,3,7,8,9 | ND | 0.2 |
| H7CDD - Total | ND | 0.3 | H7CDF - Total | ND | 0.5 |
| 1,2,3,4,6,7,8 | NDR(1.0) | 0.3 | 1,2,3,4,6,7,8 | ND | 0.5 |
| | | | 1,2,3,4,7,8,9 | ND | 0.5 |
| O8CDD | 6.1 | 0.3 | O8CDF | 0.4 | 0.3 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 78 |
| 13C-T4CDD | 81 |
| 13C-P5CDF | 74 |
| 13C-P5CDD | 75 |
| 13C-H6CDF | 89 |
| 13C-H6CDD | 86 |
| 13C-H7CDF | 83 |
| 13C-H7CDD | 83 |
| 13C-O8CDD | 89 |

2,3,7,8 - TCDD TEQs (Using NATO I-TEFs)

2,3,7,8 - TCDD TEQs (ND=1/2 DL) = 0.29 pg/g

2,3,7,8 - TCDD TEQs (ND=0) = 0.01 pg/g

1. SDL = Sample Detection Limit
2. ND = Not detected
3. NDR = Peak detected but did not meet quantification criteria
4. Concentrations are recovery corrected.

 Approved

PCB /Pesticides

PCB/PESTICIDE ANALYSIS REPORT


CL003D

| | | | |
|--------------------|----------------------|-------------------|---------------|
| CLIENT SAMPLE I.D: | Procedural Blank | AXYS ID: | WG2206-1 |
| CLIENT: | Hatfield Consultants | DATE: | 14-Dec-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | CL-T-03/Ver.3 |
| SAMPLE TYPE: | Blank | INSTRUMENT: | GC-MS/GC-ECD |
| SAMPLE SIZE: | 1.00 g | F1/F2 RUNFILE ID: | CL995479.D |
| | | F3 RUNFILE ID: | 58173 |
| | | CONCENTRATION IN: | ng/g |

| Compounds | Concentration | (SDL) |
|-----------------------|---------------|-------|
| Hexachlorobenzene | ND | 0.39 |
| alpha HCH | ND | 0.73 |
| beta HCH | ND | 1.0 |
| gamma HCH | ND | 0.73 |
| Heptachlor | ND | 2.4 |
| Aldrin | ND | 0.66 |
| Oxychlorane | ND | 2.5 |
| trans-Chlordane | ND | 0.51 |
| cis-Chlordane | ND | 0.46 |
| o,p'-DDE | ND | 0.28 |
| p,p'-DDE | ND | 0.24 |
| trans-Nonachlor | ND | 0.41 |
| cis-Nonachlor | ND | 0.30 |
| o,p'-DDD | ND | 0.19 |
| p,p'-DDD | ND | 0.20 |
| o,p'-DDT | ND | 0.23 |
| p,p'-DDT | ND | 0.27 |
| Mirex | ND | 0.32 |
| Heptachlor Epoxide | ND | 0.21 |
| alpha-Endosulphan (I) | ND | 1.1 |
| Dieldrin | ND | 0.19 |
| Endrin | ND | 0.80 |
| Methoxychlor | ND | 0.49 |
| | | |
| Aroclor 1242 | ND | 0.72 |
| Aroclor 1254 | ND | 2.5 |
| Aroclor 1260 | 11 | 2.7 |

| Surrogate Standards | % Recovery |
|-----------------------|------------|
| 13C-Hexachlorobenzene | 54 |
| 13C-gamma HCH | 67 |
| 13C-p,p'-DDE | 55 |
| 13C-p,p'-DDT | 55 |
| 13C-PCB 101 | 66 |
| 13C-PCB 180 | 85 |
| 13C-PCB 209 | 70 |
| d4-alpha-Endosulphan | 21 |

1. SDL = Sample Detection Limit
2. ND = Not Detected
3. NDR = Peak detected but did not meet quantification criteria
4. Data have not been blank corrected
5. Concentrations are recovery corrected
6. Due to similarities among the various Aroclor formulations and/or compositional changes caused by weathering, it is not always possible to identify unique Aroclor patterns in environmental samples. Where non-patterned PCBs are observed, Aroclors are quantified as a mixture of the 1242/1254/1260 formulations.


 Approved

PCB/PESTICIDE ANALYSIS REPORT


CL003D

| | | | |
|--------------------|----------------------|-------------------|---------------|
| CLIENT SAMPLE I.D: | Procedural Blank | AXYS ID: | WG2207-1 |
| CLIENT: | Hatfield Consultants | DATE: | 17-Dec-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | CL-M-07/Ver.2 |
| SAMPLE TYPE: | Blank | INSTRUMENT: | GC-MS/GC-ECD |
| SAMPLE SIZE: | 50.0 g | F1/F2 RUNFILE ID: | CL995480.D |
| | | F3 RUNFILE ID: | 58195 |
| | | CONCENTRATION IN: | ng/g |

| Compound | Concentration | SDL |
|-----------------------|---------------|--------|
| Hexachlorobenzene | ND | 0.011 |
| alpha HCH | ND | 0.014 |
| beta HCH | ND | 0.019 |
| gamma HCH | ND | 0.014 |
| Heptachlor | ND | 0.059 |
| Aldrin | ND | 0.0076 |
| Oxychlorthane | ND | 0.048 |
| trans-Chlordane | ND | 0.014 |
| cis-Chlordane | ND | 0.013 |
| o,p'-DDE | ND | 0.0035 |
| p,p'-DDE | ND | 0.0030 |
| trans-Nonachlor | ND | 0.0073 |
| cis-Nonachlor | ND | 0.0053 |
| o,p'-DDD | ND | 0.0022 |
| p,p'-DDD | ND | 0.0024 |
| o,p'-DDT | ND | 0.0032 |
| p,p'-DDT | ND | 0.0038 |
| Mirex | ND | 0.0048 |
| Heptachlor Epoxide | ND | 0.0010 |
| alpha-Endosulphan (I) | ND | 0.0020 |
| Dieldrin | ND | 0.0010 |
| Endrin | ND | 0.0070 |
| Methoxychlor | ND | 0.0050 |
| Aroclor 1242 | ND | 0.056 |
| Aroclor 1254 | ND | 0.17 |
| Aroclor 1260 | ND | 0.13 |

| Surrogate Standard | % Recovery |
|-----------------------|------------|
| 13C-Hexachlorobenzene | 38 |
| 13C-gamma HCH | 74 |
| 13C-p,p'-DDE | 80 |
| 13C-p,p'-DDT | 80 |
| 13C-PCB 101 | 75 |
| 13C-PCB 180 | 88 |
| 13C-PCB 209 | 110 |
| d4-alpha-Endosulphan | 100 |

1. SDL = Sample Detection Limit
2. ND = Not Detected
3. NDR = Peak detected but did not meet quantification criteria
4. Data have not been blank corrected
5. Concentrations are recovery corrected
6. Due to similarities among the various Aroclor formulations and/or compositional changes caused by weathering, it is not always possible to identify unique Aroclor patterns in environmental samples. Where non-patterned PCBs are observed, Aroclors are quantified as a mixture of the 1242/1254/1260 formulations.


 Approved

PCB/PESTICIDE ANALYSIS REPORT

CL003D

| | | | |
|--------------------|----------------------|-------------------|---------------|
| CLIENT SAMPLE I.D: | Procedural Blank | AXYS ID: | WG2207-1 |
| CLIENT: | Hatfield Consultants | DATE: | 17-Dec-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | CL-M-07/Ver.2 |
| SAMPLE TYPE: | Blank | INSTRUMENT: | GC-MS/GC-ECD |
| SAMPLE SIZE: | 1.43 g | F1/F2 RUNFILE ID: | CL995480.D |
| | | F3 RUNFILE ID: | 58195 |
| | | CONCENTRATION IN: | ng/g |

| Compound | Concentration | SDL |
|-----------------------|---------------|-------|
| Hexachlorobenzene | ND | 0.39 |
| alpha HCH | ND | 0.48 |
| beta HCH | ND | 0.67 |
| gamma HCH | ND | 0.48 |
| Heptachlor | ND | 2.1 |
| Aldrin | ND | 0.27 |
| Oxychlorane | ND | 1.7 |
| trans-Chlordane | ND | 0.49 |
| cis-Chlordane | ND | 0.44 |
| o,p'-DDE | ND | 0.12 |
| p,p'-DDE | ND | 0.10 |
| trans-Nonachlor | ND | 0.26 |
| cis-Nonachlor | ND | 0.19 |
| o,p'-DDD | ND | 0.077 |
| p,p'-DDD | ND | 0.084 |
| o,p'-DDT | ND | 0.11 |
| p,p'-DDT | ND | 0.13 |
| Mirex | ND | 0.17 |
| Heptachlor Epoxide | ND | 0.035 |
| alpha-Endosulphan (I) | ND | 0.070 |
| Dieldrin | ND | 0.035 |
| Endrin | ND | 0.24 |
| Methoxychlor | ND | 0.17 |
| Aroclor 1242 | ND | 1.9 |
| Aroclor 1254 | ND | 5.8 |
| Aroclor 1260 | ND | 4.4 |

| Surrogate Standard | % Recovery |
|-----------------------|------------|
| 13C-Hexachlorobenzene | 38 |
| 13C-gamma HCH | 74 |
| 13C-p,p'-DDE | 80 |
| 13C-p,p'-DDT | 80 |
| 13C-PCB 101 | 75 |
| 13C-PCB 180 | 88 |
| 13C-PCB 209 | 110 |
| d4-alpha-Endosulphan | 100 |

1. SDL = Sample Detection Limit
2. ND = Not Detected
3. NDR = Peak detected but did not meet quantification criteria
4. Data have not been blank corrected
5. Concentrations are recovery corrected
6. Due to similarities among the various Aroclor formulations and/or compositional changes caused by weathering, it is not always possible to identify unique Aroclor patterns in environmental samples. Where non-patterned PCBs are observed, Aroclors are quantified as a mixture of the 1242/1254/1260 formulations.


 Approved

Spiked Matrix Samples

Soil Samples

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

CLIENT SAMPLE I.D.: Spiked Matrix

AXYS FILE: DX-S-SPM 1160

CLIENT: Hatfield Consultants Ltd.

DATE: 20-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 10.0 g

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Determined | Expected | % Recovery | Furans | Determined | Expected | % Recovery |
|--|-------------------|-------------------|------------------|---|--------------------------|--------------------------|--------------------------|
| T4CDD - Total 2,3,7,8 | 2.0 | 1.8 | 111 | T4CDF - Total 2,3,7,8 | 1.9 | 2.0 | 95 |
| P5CDD - Total 1,2,3,7,8 | 5.7 | 5.0 | 114 | P5CDF - Total 1,2,3,7,8 2,3,4,7,8 | 4.8 5.1 | 4.6 4.6 | 104 111 |
| H6CDD - Total 1,2,3,4,7,8 1,2,3,6,7,8 1,2,3,7,8,9 | 5.4 5.1 4.9 | 5.4 5.0 5.2 | 100 102 94 | H6CDF - Total 1,2,3,4,7,8 1,2,3,6,7,8 2,3,4,6,7,8 1,2,3,7,8,9 | 5.2 5.1 4.9 4.7 | 4.6 4.6 4.6 4.6 | 113 111 107 102 |
| H7CDD - Total 1,2,3,4,6,7,8 | 4.4 | 5.5 | 80 | H7CDF - Total 1,2,3,4,6,7,8 1,2,3,4,7,8,9 | 4.9 5.1 | 5.2 4.6 | 94 111 |
| O8CDD - Total | 7.3 | 7.9 | 92 | O8CDF - Total | 7.4 | 7.9 | 94 |

| Surrogate Standards | % Recovery |
|---------------------|------------|
| 13C-T4CDF | 77 |
| 13C-T4CDD | 80 |
| 13C-P5CDF | 78 |
| 13C-P5CDD | 89 |
| 13C-H6CDF | 83 |
| 13C-H6CDD | 85 |
| 13C-H7CDF | 74 |
| 13C-H7CDD | 76 |
| 13C-O8CDD | 78 |

1. Concentrations are recovery corrected.

M. Stanulter
Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

CLIENT SAMPLE I.D.: Spiked Matrix

AXYS FILE: DX-S-SPM 1162

CLIENT: Hatfield Consultants Ltd.

DATE: 19-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 10.0 g

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Determined | Expected | % Recovery | Furans | Determined | Expected | % Recovery |
|--|-------------------|-------------------|----------------|---|--------------------------|--------------------------|-------------------------|
| T4CDD - Total 2,3,7,8 | 1.8 | 1.8 | 100 | T4CDF - Total 2,3,7,8 | 1.7 | 2.0 | 85 |
| P5CDD - Total 1,2,3,7,8 | 5.2 | 5.0 | 104 | P5CDF - Total 1,2,3,7,8 2,3,4,7,8 | 4.4 4.8 | 4.6 4.6 | 96 104 |
| H6CDD - Total 1,2,3,4,7,8 1,2,3,6,7,8 1,2,3,7,8,9 | 5.3 4.5 4.8 | 5.4 5.0 5.2 | 98 90 92 | H6CDF - Total 1,2,3,4,7,8 1,2,3,6,7,8 2,3,4,6,7,8 1,2,3,7,8,9 | 4.7 4.7 4.6 4.4 | 4.6 4.6 4.6 4.6 | 102 102 100 96 |
| H7CDD - Total 1,2,3,4,6,7,8 | 4.0 | 5.5 | 73 | H7CDF - Total 1,2,3,4,6,7,8 1,2,3,4,7,8,9 | 4.4 4.5 | 5.2 4.6 | 85 98 |
| O8CDD - Total | 7.1 | 7.9 | 90 | O8CDF - Total | 6.6 | 7.9 | 84 |

| Surrogate Standards | % Recovery |
|---------------------|------------|
| 13C-T4CDF | 78 |
| 13C-T4CDD | 80 |
| 13C-P5CDF | 81 |
| 13C-P5CDD | 81 |
| 13C-H6CDF | 78 |
| 13C-H6CDD | 77 |
| 13C-H7CDF | 68 |
| 13C-H7CDD | 64 |
| 13C-O8CDD | 69 |

1. Concentrations are recovery corrected.

McNamara

 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

CLIENT SAMPLE I.D.: Spiked Matrix

AXYS FILE: DX-S-SPM 1164

CLIENT: Hatfield Consultants Ltd.

DATE: 22-Apr-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 10.0 g

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Determined | Expected | % Recovery | Furans | Determined | Expected | % Recovery |
|--|-------------------|-------------------|-----------------|---|--------------------------|--------------------------|------------------------|
| T4CDD - Total 2,3,7,8 | 1.9 | 1.8 | 106 | T4CDF - Total 2,3,7,8 | 1.8 | 2.0 | 90 |
| P5CDD - Total 1,2,3,7,8 | 5.3 | 5.0 | 106 | P5CDF - Total 1,2,3,7,8 2,3,4,7,8 | 4.7 4.6 | 4.6 4.6 | 102 100 |
| H6CDD - Total 1,2,3,4,7,8 1,2,3,6,7,8 1,2,3,7,8,9 | 4.7 5.1 4.7 | 5.4 5.0 5.2 | 87 102 90 | H6CDF - Total 1,2,3,4,7,8 1,2,3,6,7,8 2,3,4,6,7,8 1,2,3,7,8,9 | 4.6 4.9 4.0 3.9 | 4.6 4.6 4.6 4.6 | 100 107 87 85 |
| H7CDD - Total 1,2,3,4,6,7,8 | 4.1 | 5.5 | 75 | H7CDF - Total 1,2,3,4,6,7,8 1,2,3,4,7,8,9 | 4.7 4.6 | 5.2 4.6 | 90 100 |
| O8CDD - Total | 6.9 | 7.9 | 87 | O8CDF - Total | 7.3 | 7.9 | 92 |

| Surrogate Standards | % Recovery |
|---------------------|------------|
| 13C-T4CDF | 64 |
| 13C-T4CDD | 68 |
| 13C-P5CDF | 63 |
| 13C-P5CDD | 57 |
| 13C-H6CDF | 56 |
| 13C-H6CDD | 56 |
| 13C-H7CDF | 49 |
| 13C-H7CDD | 43 |
| 13C-O8CDD | 39 |

1. Concentrations are recovery corrected.

max milbr

 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

CLIENT SAMPLE I.D.: Spiked Matrix

AXYS FILE: DX-S-SPM 1165

CLIENT: Hatfield Consultants Ltd.

DATE: 22-Apr-1999

CLIENT NO.: 2607

REVISED: 12-Oct-1999

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 10.0 g

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Determined | Expected | % Recovery | Furans | Determined | Expected | % Recovery |
|--|-------------------|-------------------|----------------|---|--------------------------|--------------------------|------------------------|
| T4CDD - Total 2,3,7,8 | 1.8 | 1.8 | 100 | T4CDF - Total 2,3,7,8 | 1.0 | 2.0 | 50 |
| P5CDD - Total 1,2,3,7,8 | 5.3 | 5.0 | 106 | P5CDF - Total 1,2,3,7,8 2,3,4,7,8 | 4.5 4.4 | 4.6 4.6 | 98 96 |
| H6CDD - Total 1,2,3,4,7,8 1,2,3,6,7,8 1,2,3,7,8,9 | 4.9 4.6 4.6 | 5.4 5.0 5.2 | 91 92 88 | H6CDF - Total 1,2,3,4,7,8 1,2,3,6,7,8 2,3,4,6,7,8 1,2,3,7,8,9 | 4.7 4.7 4.4 4.3 | 4.6 4.6 4.6 4.6 | 102 102 96 93 |
| H7CDD - Total 1,2,3,4,6,7,8 | 4.0 | 5.5 | 73 | H7CDF - Total 1,2,3,4,6,7,8 1,2,3,4,7,8,9 | 4.4 4.5 | 5.2 4.6 | 85 98 |
| O8CDD - Total | 8.4 | 7.9 | 106 | O8CDF - Total | 6.6 | 7.9 | 84 |

| Surrogate Standards | % Recovery |
|---------------------|------------|
| 13C-T4CDF | 89 |
| 13C-T4CDD | 92 |
| 13C-P5CDF | 84 |
| 13C-P5CDD | 87 |
| 13C-H6CDF | 94 |
| 13C-H6CDD | 92 |
| 13C-H7CDF | 88 |
| 13C-H7CDD | 84 |
| 13C-O8CDD | 86 |

1. Concentrations are recovery corrected.

McHamilton

Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

CLIENT SAMPLE I.D.: Spiked Matrix

AXYS FILE: DX-S-SPM 1167

CLIENT: Hatfield Consultants Ltd.

DATE: 22/Apr/1999

CLIENT NO: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 10.0 g

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Determined | Expected | % Recovery | Furans | Determined | Expected | % Recovery |
|--|-------------------|-------------------|----------------|---|--------------------------|--------------------------|------------------------|
| T4CDD - Total 2,3,7,8 | 1.9 | 1.8 | 106 | T4CDF - Total 2,3,7,8 | 1.7 | 2.0 | 85 |
| P5CDD - Total 1,2,3,7,8 | 5.3 | 5.0 | 106 | P5CDF - Total 1,2,3,7,8 2,3,4,7,8 | 4.4 5.1 | 4.6 4.6 | 96 111 |
| H6CDD - Total 1,2,3,4,7,8 1,2,3,6,7,8 1,2,3,7,8,9 | 5.2 4.7 4.2 | 5.4 5.0 5.2 | 96 94 81 | H6CDF - Total 1,2,3,4,7,8 1,2,3,6,7,8 2,3,4,6,7,8 1,2,3,7,8,9 | 4.6 4.6 3.9 3.5 | 4.6 4.6 4.6 4.6 | 100 100 85 76 |
| H7CDD - Total 1,2,3,4,6,7,8 | 4.0 | 5.5 | 73 | H7CDF - Total 1,2,3,4,6,7,8 1,2,3,4,7,8,9 | 4.5 4.7 | 5.2 4.6 | 87 102 |
| O8CDD - Total | 9.4 | 7.9 | 119 | O8CDF - Total | 7.1 | 7.4 | 96 |

| Surrogate Standards | % Recovery |
|---------------------|------------|
| 13C-T4CDF | 76 |
| 13C-T4CDD | 72 |
| 13C-P5CDF | 69 |
| 13C-P5CDD | 71 |
| 13C-H6CDF | 73 |
| 13C-H6CDD | 66 |
| 13C-H7CDF | 57 |
| 13C-H7CDD | 54 |
| 13C-O8CDD | 48 |

1. Concentrations are recovery corrected.

McK Hamilton
 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

CLIENT SAMPLE I.D.: Spiked Matrix

AXYS FILE: DX-S-SPM 1183

CLIENT: Hatfield Consultants

DATE: 13-May-1999

CLIENT NO.: 2607

SAMPLE TYPE: Sediment

METHOD NO.: DX-S-01/Ver.2

SAMPLE SIZE: 10.0 g

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Determined | Expected | % Recovery | Furans | Determined | Expected | % Recovery |
|--|-------------------|-------------------|----------------|---|--------------------------|--------------------------|------------------------|
| T4CDD - Total 2,3,7,8 | 1.8 | 1.8 | 100 | T4CDF - Total 2,3,7,8 | 1.8 | 1.9 | 95 |
| P5CDD - Total 1,2,3,7,8 | 5.4 | 5.0 | 108 | P5CDF - Total 1,2,3,7,8 2,3,4,7,8 | 5.0 5.1 | 4.6 4.6 | 109 111 |
| H6CDD - Total 1,2,3,4,7,8 1,2,3,6,7,8 1,2,3,7,8,9 | 5.2 4.7 4.3 | 5.4 5.0 5.2 | 96 94 83 | H6CDF - Total 1,2,3,4,7,8 1,2,3,6,7,8 2,3,4,6,7,8 1,2,3,7,8,9 | 4.9 4.8 4.3 3.7 | 4.6 4.6 4.6 4.6 | 107 104 93 80 |
| H7CDD - Total 1,2,3,4,6,7,8 | 4.2 | 4.4 | 95 | H7CDF - Total 1,2,3,4,6,7,8 1,2,3,4,7,8,9 | 4.7 4.6 | 4.6 4.6 | 102 100 |
| O8CDD - Total | 7.5 | 7.4 | 101 | O8CDF - Total | 6.8 | 7.4 | 92 |

| Surrogate Standards | % Recovery |
|---------------------|------------|
| 13C-T4CDF | 78 |
| 13C-T4CDD | 82 |
| 13C-P5CDF | 71 |
| 13C-P5CDD | 75 |
| 13C-H6CDF | 76 |
| 13C-H6CDD | 74 |
| 13C-H7CDF | 62 |
| 13C-H7CDD | 61 |
| 13C-O8CDD | 52 |

1. Concentrations are recovery corrected.

mclanilton
 Approved

Tissue Samples

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

CLIENT SAMPLE I.D.: Spiked Matrix

AXYS FILE: DX-T-SPM 1269

CLIENT: Hatfield Consultants Ltd.

DATE: 21-Aug-1999

CLIENT NO.: 2607

REVISED: 15-Feb-2000

SAMPLE TYPE: Tissue

METHOD NO.: DX-T-03/Ver.2

SAMPLE SIZE: 10.0 g


INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Determined | Expected | % Recovery | Furans | Determined | Expected | % Recovery |
|---------------------------------------|------------|----------|------------|---------------------------------------|------------|----------|------------|
| T4CDD - Total 2,3,7,8 | 1.8 | 1.8 | 100 | T4CDF - Total 2,3,7,8 | 1.7 | 1.9 | 89 |
| P5CDD - Total 1,2,3,7,8 | 5.2 | 5.0 | 104 | P5CDF - Total 1,2,3,7,8 | 4.3 | 4.6 | 93 |
| | | | | 2,3,4,7,8 | 4.8 | 4.6 | 104 |
| H6CDD - Total 1,2,3,4,7,8 | 5.0 | 5.4 | 93 | H6CDF - Total 1,2,3,4,7,8 | 4.9 | 4.6 | 107 |
| 1,2,3,6,7,8 | 4.3 | 5.0 | 86 | 1,2,3,6,7,8 | 4.4 | 4.6 | 96 |
| 1,2,3,7,8,9 | 3.5 | 5.2 | 67 | 2,3,4,6,7,8 | 3.6 | 4.6 | 78 |
| | | | | 1,2,3,7,8,9 | 3.2 | 4.6 | 70 |
| H7CDD - Total 1,2,3,4,6,7,8 | 3.8 | 4.4 | 86 | H7CDF - Total 1,2,3,4,6,7,8 | 4.2 | 4.6 | 91 |
| | | | | 1,2,3,4,7,8,9 | 4.2 | 4.6 | 91 |
| O8CDD | 7.0 | 7.4 | 95 | O8CDF | 6.7 | 7.4 | 91 |

| Surrogate Standards | % Recovery |
|---------------------|------------|
| 13C-T4CDF | 89 |
| 13C-T4CDD | 81 |
| 13C-P5CDF | 75 |
| 13C-P5CDD | 75 |
| 13C-H6CDF | 81 |
| 13C-H6CDD | 78 |
| 13C-H7CDF | 55 |
| 13C-H7CDD | 54 |
| 13C-O8CDD | 45 |

1. Concentrations are recovery corrected.


Approved

00225

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

CLIENT SAMPLE I.D.: Spiked Matrix

AXYS FILE: DX-T-SPM 1270 i2

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Aug-1999

CLIENT NO.: 2607

SAMPLE TYPE: Tissue

METHOD NO.: DX-T-03/Ver.2

SAMPLE SIZE: 10.0 g

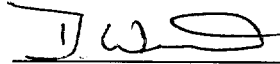
INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Determined | Expected | % Recovery | Furans | Determined | Expected | % Recovery |
|--|-------------------|-------------------|-------------------|---|--------------------------|--------------------------|--------------------------|
| T4CDD - Total 2,3,7,8 | 2.1 | 1.8 | 117 | T4CDF - Total 2,3,7,8 | 2.1 | 2.0 | 105 |
| P5CDD - Total 1,2,3,7,8 | 6.0 | 5.0 | 120 | P5CDF - Total 1,2,3,7,8 2,3,4,7,8 | 4.9 5.2 | 4.6 4.6 | 107 113 |
| H6CDD - Total 1,2,3,4,7,8 1,2,3,6,7,8 1,2,3,7,8,9 | 5.7 5.0 5.7 | 5.4 5.0 5.2 | 106 100 110 | H6CDF - Total 1,2,3,4,7,8 1,2,3,6,7,8 2,3,4,6,7,8 1,2,3,7,8,9 | 5.2 5.1 4.8 4.8 | 4.7 4.6 4.6 4.6 | 111 111 104 104 |
| H7CDD - Total 1,2,3,4,6,7,8 | 4.5 | 4.4 | 102 | H7CDF - Total 1,2,3,4,6,7,8 1,2,3,4,7,8,9 | 5.1 5.3 | 4.6 4.6 | 111 115 |
| O8CDD | 8.2 | 8.2 | 100 | O8CDF | 7.5 | 7.4 | 101 |

| Surrogate Standards | % Recovery |
|---------------------|------------|
| 13C-T4CDF | 83 |
| 13C-T4CDD | 90 |
| 13C-P5CDF | 91 |
| 13C-P5CDD | 95 |
| 13C-H6CDF | 89 |
| 13C-H6CDD | 84 |
| 13C-H7CDF | 74 |
| 13C-H7CDD | 74 |
| 13C-O8CDD | 83 |

1. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

CLIENT SAMPLE I.D.: Spiked Matrix

AXYS FILE: WG2028-2

CLIENT: Hatfield Consultants Ltd.

DATE: 03-Nov-1999

CLIENT NO.: 2607

SAMPLE TYPE: Tissue

METHOD NO.: DX-T-03/Ver.2

SAMPLE SIZE: 10.0 g

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Determined | Expected | % Recovery | Furans | Determined | Expected | % Recovery |
|--|-------------------|-------------------|----------------|---|--------------------------|--------------------------|-----------------------|
| T4CDD - Total 2,3,7,8 | 1.8 | 1.8 | 100 | T4CDF - Total 2,3,7,8 | 1.8 | 1.9 | 95 |
| P5CDD - Total 1,2,3,7,8 | 5.3 | 5.0 | 106 | P5CDF - Total 1,2,3,7,8 2,3,4,7,8 | 4.0 3.7 | 4.6 4.6 | 87 80 |
| H6CDD - Total 1,2,3,4,7,8 1,2,3,6,7,8 1,2,3,7,8,9 | 5.0 4.5 4.6 | 5.4 5.0 5.2 | 93 90 88 | H6CDF - Total 1,2,3,4,7,8 1,2,3,6,7,8 2,3,4,6,7,8 1,2,3,7,8,9 | 4.8 4.1 4.1 4.1 | 4.6 4.6 4.6 4.6 | 104 89 89 89 |
| H7CDD - Total 1,2,3,4,6,7,8 | 3.8 | 4.4 | 86 | H7CDF - Total 1,2,3,4,6,7,8 1,2,3,4,7,8,9 | 4.4 4.7 | 4.6 4.6 | 96 102 |
| O8CDD | 6.6 | 7.4 | 89 | O8CDF | 7.1 | 7.4 | 96 |

| Surrogate Standards | % Recovery |
|---------------------|------------|
| 13C-T4CDF | 100 |
| 13C-T4CDD | 100 |
| 13C-P5CDF | 100 |
| 13C-P5CDD | 91 |
| 13C-H6CDF | 98 |
| 13C-H6CDD | 92 |
| 13C-H7CDF | 77 |
| 13C-H7CDD | 75 |
| 13C-O8CDD | 59 |

1. Concentrations are recovery corrected.



 Approved

**ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS**

CLIENT SAMPLE I.D.: Spiked Matrix

AXYS FILE: WG2079-2

CLIENT: Hatfield Consultants Ltd.

DATE: 03-Dec-1999

CLIENT NO.: 2607

SAMPLE TYPE: Oil

METHOD NO.: DX-P-01/Ver.2

SAMPLE SIZE: 10.0 g

INSTRUMENT: GC-HRMS


CONCENTRATION IN: pg/g

| Dioxins | Determined | Expected | % Recovery | Furans | Determined | Expected | % Recovery |
|--|-------------------|-------------------|----------------|---|--------------------------|--------------------------|------------------------|
| T4CDD - Total 2,3,7,8 | 2.0 | 1.8 | 111 | T4CDF - Total 2,3,7,8 | 1.9 | 1.9 | 100 |
| P5CDD - Total 1,2,3,7,8 | 5.7 | 5.0 | 114 | P5CDF - Total 1,2,3,7,8 2,3,4,7,8 | 4.9 4.9 | 4.6 4.6 | 107 107 |
| H6CDD - Total 1,2,3,4,7,8 1,2,3,6,7,8 1,2,3,7,8,9 | 5.3 4.7 4.7 | 5.4 5.0 5.2 | 98 94 90 | H6CDF - Total 1,2,3,4,7,8 1,2,3,6,7,8 2,3,4,6,7,8 1,2,3,7,8,9 | 5.0 5.0 4.4 4.2 | 4.6 4.6 4.6 4.6 | 109 109 96 91 |
| H7CDD - Total 1,2,3,4,6,7,8 | 4.2 | 4.4 | 95 | H7CDF - Total 1,2,3,4,6,7,8 1,2,3,4,7,8,9 | 4.7 4.5 | 4.6 4.6 | 102 98 |
| O8CDD | 7.5 | 7.4 | 101 | O8CDF | 8.1 | 7.4 | 109 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 82 |
| 13C-T4CDD | 85 |
| 13C-P5CDF | 85 |
| 13C-P5CDD | 84 |
| 13C-H6CDF | 81 |
| 13C-H6CDD | 79 |
| 13C-H7CDF | 65 |
| 13C-H7CDD | 61 |
| 13C-O8CDD | 52 |

1. Concentrations are recovery corrected.


Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

CLIENT SAMPLE I.D.: Spiked Matrix

AXYS FILE: WG2294-2

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Dec-1999

CLIENT NO.: 2607

SAMPLE TYPE: Tissue

METHOD NO. DX-T-03/Ver.2

SAMPLE SIZE: 10.0 g (wet)

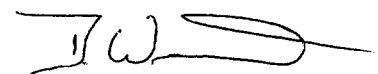
INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Determined | Expected | % Recovery | Furans | Determined | Expected | % Recovery |
|--|-------------------|-------------------|-----------------|---|--------------------------|--------------------------|-----------------------|
| T4CDD - Total 2,3,7,8 | 2.1 | 1.8 | 117 | T4CDF - Total 2,3,7,8 | 2.0 | 1.9 | 105 |
| P5CDD - Total 1,2,3,7,8 | 5.5 | 5.0 | 110 | P5CDF - Total 1,2,3,7,8 2,3,4,7,8 | 4.9 5.6 | 4.6 4.6 | 107 122 |
| H6CDD - Total 1,2,3,4,7,8 1,2,3,6,7,8 1,2,3,7,8,9 | 6.0 4.8 3.7 | 5.4 5.0 5.2 | 111 96 71 | H6CDF - Total 1,2,3,4,7,8 1,2,3,6,7,8 2,3,4,6,7,8 1,2,3,7,8,9 | 5.2 4.5 3.8 3.2 | 4.6 4.6 4.6 4.6 | 113 98 83 70 |
| H7CDD - Total 1,2,3,4,6,7,8 | 4.3 | 4.4 | 98 | H7CDF - Total 1,2,3,4,6,7,8 1,2,3,4,7,8,9 | 4.9 5.1 | 4.6 4.6 | 107 111 |
| O8CDD | 7.2 | 7.4 | 97 | O8CDF | 8.2 | 7.4 | 111 |

| Surrogate Standards | % Recovery |
|---------------------|------------|
| 13C-T4CDF | 58 |
| 13C-T4CDD | 54 |
| 13C-P5CDF | 46 |
| 13C-P5CDD | 51 |
| 13C-H6CDF | 61 |
| 13C-H6CDD | 61 |
| 13C-H7CDF | 36 |
| 13C-H7CDD | 36 |
| 13C-O8CDD | 20 |

1. Concentrations are recovery corrected.


 Approved

Milk Samples

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

CLIENT SAMPLE I.D.: Spiked Matrix

AXYS FILE: WG1918-2 i

CLIENT: Hatfield Consultants

DATE: 17-Sep-1999

CLIENT NO.: 2607

REVISED: 05-Oct-1999

SAMPLE TYPE: Milk

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 10.0 g

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Determined | Expected | % Recovery | Furans | Determined | Expected | % Recovery |
|--|-------------------|-------------------|------------------|---|--------------------------|--------------------------|--------------------------|
| T4CDD - Total 2,3,7,8 | 2.0 | 1.8 | 111 | T4CDF - Total 2,3,7,8 | 1.9 | 1.9 | 100 |
| P5CDD - Total 1,2,3,7,8 | 5.9 | 5.0 | 118 | P5CDF - Total 1,2,3,7,8 2,3,4,7,8 | 5.0 4.9 | 4.6 4.6 | 109 107 |
| H6CDD - Total 1,2,3,4,7,8 1,2,3,6,7,8 1,2,3,7,8,9 | 5.3 5.3 5.3 | 5.4 5.0 5.2 | 98 106 102 | H6CDF - Total 1,2,3,4,7,8 1,2,3,6,7,8 2,3,4,6,7,8 1,2,3,7,8,9 | 5.3 4.9 5.4 5.0 | 4.6 4.6 4.6 4.6 | 115 107 117 109 |
| H7CDD - Total 1,2,3,4,6,7,8 | 4.7 | 4.4 | 107 | H7CDF - Total 1,2,3,4,6,7,8 1,2,3,4,7,8,9 | 5.0 5.2 | 4.6 4.6 | 109 113 |
| O8CDD | 7.3 | 7.4 | 99 | O8CDF | 7.3 | 7.4 | 99 |

| Surrogate Standards | % Recovery |
|---------------------|------------|
| 13C-T4CDF | 76 |
| 13C-T4CDD | 79 |
| 13C-P5CDF | 74 |
| 13C-P5CDD | 77 |
| 13C-H6CDF | 76 |
| 13C-H6CDD | 81 |
| 13C-H7CDF | 70 |
| 13C-H7CDD | 70 |
| 13C-O8CDD | 77 |

1. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

CLIENT SAMPLE I.D.: Spiked Matrix

AXYS FILE: WG1919-2

CLIENT: Hatfield Consultants

DATE: 14-Sept-1999

CLIENT NO.: 2607

SAMPLE TYPE: Milk

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 10.0 g

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Determined | Expected | % Recovery | Furans | Determined | Expected | % Recovery |
|--------------------------------|------------|----------|------------|--------------------------------|------------|----------|------------|
| T4CDD - Total 2,3,7,8 | 2.0 | 1.8 | 111 | T4CDF - Total 2,3,7,8 | 1.8 | 1.9 | 95 |
| P5CDD - Total 1,2,3,7,8 | 5.5 | 5.0 | 110 | P5CDF - Total 1,2,3,7,8 | 4.8 | 4.6 | 104 |
| | | | | 2,3,4,7,8 | 4.9 | 4.6 | 107 |
| H6CDD - Total 1,2,3,4,7,8 | 5.3 | 5.4 | 98 | H6CDF - Total 1,2,3,4,7,8 | 5.0 | 4.6 | 109 |
| 1,2,3,6,7,8 | 5.3 | 5.0 | 106 | 1,2,3,6,7,8 | 4.9 | 4.6 | 107 |
| 1,2,3,7,8,9 | 5.3 | 5.2 | 102 | 2,3,4,6,7,8 | 4.9 | 4.6 | 107 |
| | | | | 1,2,3,7,8,9 | 5.1 | 4.6 | 111 |
| H7CDD - Total 1,2,3,4,6,7,8 | 4.5 | 4.4 | 102 | H7CDF - Total 1,2,3,4,6,7,8 | 5.0 | 4.6 | 109 |
| | | | | 1,2,3,4,7,8,9 | 4.9 | 4.6 | 107 |
| O8CDD | 7.2 | 7.4 | 97 | O8CDF | 7.0 | 7.4 | 95 |

| Surrogate Standards | % Recovery |
|---------------------|------------|
| 13C-T4CDF | 84 |
| 13C-T4CDD | 86 |
| 13C-P5CDF | 85 |
| 13C-P5CDD | 98 |
| 13C-H6CDF | 88 |
| 13C-H6CDD | 90 |
| 13C-H7CDF | 84 |
| 13C-H7CDD | 84 |
| 13C-O8CDD | 86 |

1. Concentrations are recovery corrected.

M. Hamilton

 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

CLIENT SAMPLE I.D.: Spiked Matrix

AXYS FILE: WG2217-2 i

CLIENT: Hatfield Consultants Ltd.

DATE: 21-Dec-1999

CLIENT NO.: 2607

SAMPLE TYPE: Milk

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 50.0 g

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Determined | Expected | % Recovery | Furans | Determined | Expected | % Recovery |
|--------------------------------|------------|----------|------------|--------------------------------|------------|----------|------------|
| T4CDD - Total 2,3,7,8 | 0.40 | 0.36 | 111 | T4CDF - Total 2,3,7,8 | 0.37 | 0.39 | 95 |
| P5CDD - Total 1,2,3,7,8 | 1.1 | 1.0 | 110 | P5CDF - Total 1,2,3,7,8 | 0.95 | 0.93 | 102 |
| | | | | 2,3,4,7,8 | 0.98 | 0.93 | 105 |
| H6CDD - Total 1,2,3,4,7,8 | 1.0 | 1.1 | 91 | H6CDF - Total 1,2,3,4,7,8 | 1.0 | 0.94 | 106 |
| 1,2,3,6,7,8 | 1.0 | 1.0 | 100 | 1,2,3,6,7,8 | 0.96 | 0.93 | 103 |
| 1,2,3,7,8,9 | 0.99 | 1.1 | 90 | 2,3,4,6,7,8 | 0.93 | 0.92 | 101 |
| | | | | 1,2,3,7,8,9 | 0.94 | 0.92 | 102 |
| H7CDD - Total 1,2,3,4,6,7,8 | 0.90 | 0.95 | 95 | H7CDF - Total 1,2,3,4,6,7,8 | 0.97 | 0.94 | 103 |
| | | | | 1,2,3,4,7,8,9 | 1.0 | 0.93 | 108 |
| O8CDD | 1.5 | 1.6 | 94 | O8CDF | 1.5 | 1.5 | 100 |

| Surrogate Standards | % Recovery |
|---------------------|------------|
| 13C-T4CDF | 77 |
| 13C-T4CDD | 81 |
| 13C-P5CDF | 71 |
| 13C-P5CDD | 71 |
| 13C-H6CDF | 75 |
| 13C-H6CDD | 75 |
| 13C-H7CDF | 65 |
| 13C-H7CDD | 65 |
| 13C-O8CDD | 59 |

1. Concentrations are recovery corrected.


 Approved

00240

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

CLIENT SAMPLE I.D.: Spiked Matrix

AXYS FILE: WG2640-102 i

CLIENT: Hatfield Consultants Ltd.

DATE: 16-MAR-2000

CLIENT NO.: 2607

SAMPLE TYPE: Milk

METHOD NO.: DX-M-04/Ver.3

SAMPLE SIZE: 50.0 g


INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Determined | Expected | % Recovery | Furans | Determined | Expected | % Recovery |
|--|--------------------|-------------------|------------------|---|----------------------------|------------------------------|-------------------------|
| T4CDD - Total 2,3,7,8 | 0.39 | 0.36 | 108 | T4CDF - Total 2,3,7,8 | 0.37 | 0.39 | 95 |
| P5CDD - Total 1,2,3,7,8 | 1.2 | 1.0 | 120 | P5CDF - Total 1,2,3,7,8 2,3,4,7,8 | 1.0 0.99 | 0.93 0.93 | 108 106 |
| H6CDD - Total 1,2,3,4,7,8 1,2,3,6,7,8 1,2,3,7,8,9 | 1.1 1.1 0.98 | 1.1 1.0 1.1 | 100 110 89 | H6CDF - Total 1,2,3,4,7,8 1,2,3,6,7,8 2,3,4,6,7,8 1,2,3,7,8,9 | 1.0 1.0 0.92 0.89 | 0.94 0.93 0.92 0.92 | 106 108 100 97 |
| H7CDD - Total 1,2,3,4,6,7,8 | 0.95 | 0.95 | 100 | H7CDF - Total 1,2,3,4,6,7,8 1,2,3,4,7,8,9 | 0.94 0.93 | 0.94 0.93 | 100 100 |
| O8CDD | 1.4 | 1.6 | 88 | O8CDF | 1.5 | 1.5 | 100 |

| Surrogate Standards | % Recovery |
|---------------------|------------|
| 13C-T4CDF | 79 |
| 13C-T4CDD | 82 |
| 13C-P5CDF | 74 |
| 13C-P5CDD | 78 |
| 13C-H6CDF | 76 |
| 13C-H6CDD | 79 |
| 13C-H7CDF | 67 |
| 13C-H7CDD | 63 |
| 13C-O8CDD | 62 |

1. Concentrations are recovery corrected.


 Approved

Blood Samples

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

CLIENT SAMPLE I.D.: Spiked Matrix

AXYS FILE: WG1931-2 L

CLIENT: Hatfield Consultants Ltd.

DATE: 28-Oct-1999

CLIENT NO.: 2607

SAMPLE TYPE: Blood

METHOD NO.: DX-B-06/Ver.1

SAMPLE SIZE: 10.0 g

INSTRUMENT: GC-HRMS

CONCENTRATION IN: pg/g

| Dioxins | Determined | Expected | % Recovery | Furans | Determined | Expected | % Recovery |
|---------------------------------------|------------|----------|------------|---------------------------------------|------------|----------|------------|
| T4CDD - Total 2,3,7,8 | 0.99 | 0.90 | 110 | T4CDF - Total 2,3,7,8 | 0.92 | 0.95 | 97 |
| P5CDD - Total 1,2,3,7,8 | 3.0 | 2.5 | 120 | P5CDF - Total 1,2,3,7,8 | 2.4 | 2.3 | 104 |
| | | | | 2,3,4,7,8 | 2.4 | 2.3 | 104 |
| H6CDD - Total 1,2,3,4,7,8 | 2.7 | 2.7 | 100 | H6CDF - Total 1,2,3,4,7,8 | 2.6 | 2.4 | 108 |
| 1,2,3,6,7,8 | 2.7 | 2.7 | 100 | 1,2,3,6,7,8 | 2.4 | 2.3 | 104 |
| 1,2,3,7,8,9 | 2.3 | 2.6 | 88 | 2,3,4,6,7,8 | 2.1 | 2.3 | 91 |
| | | | | 1,2,3,7,8,9 | 2.0 | 2.3 | 87 |
| H7CDD - Total 1,2,3,4,6,7,8 | 2.4 | 2.5 | 96 | H7CDF - Total 1,2,3,4,6,7,8 | 2.6 | 2.3 | 113 |
| | | | | 1,2,3,4,7,8,9 | 2.2 | 2.3 | 96 |
| O8CDD | 6.5 | 6.2 | 105 | O8CDF | 3.4 | 3.7 | 92 |

| Surrogate Standards | % Recovery |
|---------------------|------------|
| 13C-T4CDF | 76 |
| 13C-T4CDD | 80 |
| 13C-P5CDF | 81 |
| 13C-P5CDD | 78 |
| 13C-H6CDF | 82 |
| 13C-H6CDD | 80 |
| 13C-H7CDF | 56 |
| 13C-H7CDD | 53 |
| 13C-O8CDD | 46 |

1. Concentrations are recovery corrected.


 Approved

ANALYSIS REPORT
POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

CLIENT SAMPLE I.D.: Spiked Matrix

AXYS FILE: WG1949-2

CLIENT: 2607

DATE: 28-Oct-1999

CLIENT NO.:

SAMPLE TYPE: Blood

METHOD NO.: DX-B-06/Ver.1

SAMPLE SIZE: 10.0 g (wet)

INSTRUMENT: GC-HRMS


CONCENTRATION IN: pg/g

| Dioxins | Determined | Expected | % Recovery | Furans | Determined | Expected | % Recovery |
|--|-------------------|-------------------|-------------------|---|--------------------------|--------------------------|--------------------------|
| T4CDD - Total 2,3,7,8 | 1.0 | 0.90 | 111 | T4CDF - Total 2,3,7,8 | 0.99 | 0.95 | 104 |
| P5CDD - Total 1,2,3,7,8 | 2.9 | 2.5 | 116 | P5CDF - Total 1,2,3,7,8 2,3,4,7,8 | 2.4 2.4 | 2.3 2.3 | 104 104 |
| H6CDD - Total 1,2,3,4,7,8 1,2,3,6,7,8 1,2,3,7,8,9 | 2.7 2.5 2.7 | 2.7 2.5 2.6 | 100 100 104 | H6CDF - Total 1,2,3,4,7,8 1,2,3,6,7,8 2,3,4,6,7,8 1,2,3,7,8,9 | 2.6 2.3 2.3 2.5 | 2.4 2.3 2.3 2.3 | 108 100 100 109 |
| H7CDD - Total 1,2,3,4,6,7,8 | 2.4 | 2.5 | 96 | H7CDF - Total 1,2,3,4,6,7,8 1,2,3,4,7,8,9 | 2.5 2.4 | 2.4 2.3 | 104 104 |
| O8CDD | 5.8 | 6.2 | 94 | O8CDF | 3.6 | 3.7 | 97 |

Surrogate Standards % Recovery

| | |
|-----------|----|
| 13C-T4CDF | 89 |
| 13C-T4CDD | 92 |
| 13C-P5CDF | 89 |
| 13C-P5CDD | 94 |
| 13C-H6CDF | 89 |
| 13C-H6CDD | 87 |
| 13C-H7CDF | 75 |
| 13C-H7CDD | 80 |
| 13C-O8CDD | 87 |

1. Concentrations are recovery corrected.


 Approved

PCB /Pesticides

PCB/PESTICIDE ANALYSIS REPORT

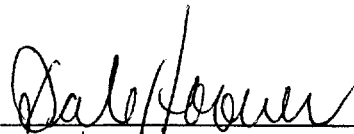
CL003D

| | | | |
|---------------------------|-----------------------------|--------------------------|----------------------|
| CLIENT SAMPLE I.D: | Spiked Matrix | AXYS ID: | WG2207-2 |
| CLIENT: | Hatfield Consultants | DATE: | 17-Dec-1999 |
| CLIENT NO.: | 2607 | METHOD NO.: | CL-M-07/Ver.2 |
| SAMPLE TYPE: | Milk | INSTRUMENT: | GC-MS/GC-ECD |
| SAMPLE SIZE: | 50.0 g (wet) | F1/F2 RUNFILE ID: | CL995514.D |
| | | F3 RUNFILE ID: | 58194 |
| | | CONCENTRATION IN: | ng/g |

| Compounds | Determined | Expected | % Recovery |
|-----------------------|------------|----------|------------|
| Hexachlorobenzene | 1.1 | 1.0 | 108 |
| alpha HCH | 0.83 | 0.88 | 94 |
| beta HCH | 1.1 | 1.0 | 106 |
| gamma HCH | 0.72 | 0.74 | 97 |
| Heptachlor | 1.0 | 0.98 | 99 |
| Aldrin | 1.1 | 1.1 | 104 |
| Oxychlorane | 1.2 | 0.98 | 122 |
| trans-Chlordane | 1.0 | 0.94 | 106 |
| cis-Chlordane | 0.86 | 0.88 | 98 |
| o,p'-DDE | 1.0 | 1.1 | 91 |
| p,p'-DDE | 1.0 | 1.1 | 94 |
| trans-Nonachlor | 0.99 | 0.98 | 101 |
| cis-Nonachlor | 0.84 | 0.82 | 102 |
| o,p'-DDD | 1.1 | 1.0 | 106 |
| p,p'-DDD | 1.1 | 0.96 | 115 |
| o,p'-DDT | 1.1 | 1.0 | 110 |
| p,p'-DDT | 1.0 | 0.92 | 109 |
| Mirex | 0.80 | 1.0 | 78 |
| Heptachlor Epoxide | 0.70 | 0.88 | 80 |
| alpha-Endosulphan (I) | 1.0 | 0.87 | 115 |
| Dieldrin | 0.68 | 0.90 | 76 |
| Endrin | 2.1 | 2.1 | 100 |
| Methoxychlor | 4.0 | 5.9 | 68 |
| | | | |
| Aroclor 1242 | 11 | 9.6 | 115 |
| Aroclor 1254 | 9.7 | 9.0 | 108 |
| Aroclor 1260 | 8.5 | 9.4 | 90 |

| Surrogate Standards | % Recovery |
|-----------------------|------------|
| 13C-Hexachlorobenzene | 61 |
| 13C-gamma HCH | 83 |
| 13C-p,p'-DDE | 100 |
| 13C-p,p'-DDT | 92 |
| 13C-PCB 101 | 93 |
| 13C-PCB 180 | 98 |
| 13C-PCB 209 | 120 |
| d4-alpha-Endosulphan | 71 |

- Concentrations are recovery corrected
- Due to similarities among the various Aroclor formulations and/or compositional changes caused by weathering, it is not always possible to identify unique Aroclor patterns in environmental samples. Where non-patterned PCBs are observed, Aroclors are quantified as a mixture of the 1242/1254/1260 formulations.



 Approved

00243

Section 9

Batch Summary Sheets

BATCH SUMMARY

| | |
|---|-------------------------------|
| Batch ID: CLWG2206 | Date: 14 December 1999 |
| Analysis Type: Pesticides (F1/F2, F3/F4) and Aroclors | Matrix Type: Oil |
| BATCH MAKEUP | |
| Contract: 2607 Samples: L2072 -4 | Blank: WG2206-1 |
| | Reference or Spike: |
| | Duplicate: |
| Comments: 1. No analytical difficulties experienced with this batch of data. All QA/QC specifications were met. | |

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QA /06 Rev. 2. July 18/94

00244

BATCH SUMMARY

| | |
|---|--|
| <i>Batch ID:</i> CLWG2207 | <i>Date:</i> 21 December 1999 |
| <i>Analysis Type:</i> Pesticides (F1/F2, F3/F4) and Aroclors | <i>Matrix Type:</i> Milk |
| BATCH MAKEUP | |
| <i>Contract:</i> 2607 <i>Samples:</i> L2044 -1 -2 -3 -4 | <i>Blank:</i> WG2207-1 |
| | <i>Reference or Spike:</i> WG2207-2 |
| | <i>Duplicate:</i> |
| <i>Comments:</i> | |

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BATCH SUMMARY

| | |
|--|---|
| Batch ID: DXWG1521 | Date: 22 April 1999 |
| Analysis Type: Dioxin/Furan | Matrix Type: Sediment |
| BATCH MAKEUP | |
| Samples: L1610 -1 -2 -3 -4 -5A -6 -7 -8 -9 | Blank: DX-S-BLK 2042 |
| | Reference or Spike: DX-S-SPM 1160 |
| | Duplicate: L1610-5B |
| Comments | |

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BATCH SUMMARY

| | |
|--|---|
| Batch ID: DXWG1526 | Date: 19 April 1999 |
| Analysis Type: Dioxin/Furan | Matrix Type: Sediment |
| BATCH MAKEUP | |
| Contract: 2607 Samples: L1610 -10 -11 -12 -14 -15 -16 -17 -18A | Blank: DX-S-BLK 2044 |
| | Reference or Spike: DX-S-SPM 1162 |
| | Duplicate: L1610-18B |
| Comments 1. Please note that sample results have not been corrected for concentrations detected in laboratory procedural blanks. | |

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BATCH SUMMARY

| | |
|---|---|
| Batch ID: DXWG1531 | Date: 22 April 1999 |
| Analysis Type: Dioxin/Furan | Matrix Type: Sediment |
| BATCH MAKEUP | |
| Samples: L1610 -19 -20 -21 -22 -23 -24A -25 -26 -27 | Blank: DX-S-BLK 2046 |
| | Reference or Spike: DX-S-SPM 1164 |
| | Duplicate: L1610-24B |
| Comments | |

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BATCH SUMMARY

| | |
|---|---|
| Batch ID: DXWG1532 | Date: 22 April 1999 |
| Analysis Type: Dioxin/Furan | Matrix Type: Sediment |
| BATCH MAKEUP | |
| Samples: L1610 -28 -29 -30A -31 -32 -34 -35 -36 -37 | Blank: DX-S-BLK 2047 |
| | Reference or Spike: DX-S-SPM 1165 |
| | Duplicate: L1610-30B |
| Comments | |

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BATCH SUMMARY

| | |
|--|---|
| Batch ID: DXWG1535 | Date: 22 April 1999 |
| Analysis Type: Dioxin/Furan | Matrix Type: Sediment |
| BATCH MAKEUP | |
| Samples: L1610 -38 -39 -40 -41 -42 -43 -44 -45 -46 -47A | Blank: DX-S-BLK 2049 |
| | Reference or Spike: DX-S-SPM 1167 |
| | Duplicate: L1610-47B |
| Comments | |

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BATCH SUMMARY

| | |
|-------------------------------------|---|
| Batch ID: DXWG1578 | Date: 13 May 1999 |
| Analysis Type: Dioxin/Furan | Matrix Type: Sediment |
| BATCH MAKEUP | |
| Samples: L1610 -13 -33 | Blank: DX-S-BLK 2069 |
| | Reference or Spike: DX-S-SPM 1183 |
| | Duplicate: |
| Comments | |

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00251

BATCH SUMMARY

| | |
|--|---|
| Batch ID: DXWG1856 | Date: 24 Aug 1999 |
| Analysis Type: Dioxin/Furan | Matrix Type: Tissue |
| BATCH MAKEUP | |
| Samples: L1825-1 -2 -3 -8 -16 -19 -20 -24 | Blank: DX-T-BLK 3072 i |
| | Reference or Spike: DX-T-SPM 1269 |
| | Duplicate: |
| Comments | |

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BATCH SUMMARY

| | |
|--|---|
| Batch ID: DXWG1857 | Date: 04 September 1999 |
| Analysis Type: Dioxin/Furan | Matrix Type: Tissue |
| BATCH MAKEUP | |
| Contract: 2607 Samples: L1825 -25 -26 -27 -28 -29 -30A -34 | Blank: DX-T-BLK 3074 |
| | Reference or Spike: DX-T-SPM 1270 |
| | Duplicate: L1825-30B |
| Comments | |

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BATCH SUMMARY

| | |
|---|---|
| Batch ID: DXWG1858 | Date: 28 August 1999 |
| Analysis Type: Dioxin/Furan | Matrix Type: Tissue |
| BATCH MAKEUP | |
| Contract: 2607 Samples: L1825 -35A -36 -38 -39 -41 -42 | Blank: DX-T-BLK 3073 i2 |
| | Reference or Spike: DX-T-SPM 1269 |
| | Duplicate: L1825-35B |
| Comments | |

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BATCH SUMMARY

| | |
|--|--|
| Batch ID: DXWG1918 | Date: 05 October 1999 |
| Analysis Type: Dioxin/Furan | Matrix Type: Milk |
| BATCH MAKEUP | |
| Contract: 2607 Samples: L1936 -1 -2 -3 -4 -5 -6 | Blank: WG1918-1 |
| | Reference or Spike: WG1918-2 |
| | Duplicate: |
| Comments | |

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00255

BATCH SUMMARY

| | |
|---|--|
| <i>Batch ID:</i> DXWG1919 | <i>Date:</i> 05 October 1999 |
| <i>Analysis Type:</i> Dioxin/Furan | <i>Matrix Type:</i> Milk |
| BATCH MAKEUP | |
| <i>Contract:</i> 2607 <i>Samples:</i> L1936 -7 -8 -9 -10 -11 -12 | <i>Blank:</i> WG1919-1 |
| | <i>Reference or Spike:</i> WG1919-2 |
| | <i>Duplicate:</i> |
| <i>Comments</i> | |

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00256

BATCH SUMMARY

| | |
|--|--|
| Batch ID: DXWG1931 | Date: 28 October 1999 |
| Analysis Type: Dioxin/Furan | Matrix Type: Blood |
| BATCH MAKEUP | |
| Contract: 2607 Samples: L1935 -1 -2 -3 -4 -5 -6 -7 -8 -9 | Blank: WG1931-1 |
| | Reference or Spike: WG1931-2 |
| | Duplicate: |
| Comments | |

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BATCH SUMMARY

| | |
|--|--|
| Batch ID: DXWG1949 | Date: 28 October 1999 |
| Analysis Type: Dioxin/Furan | Matrix Type: Blood |
| BATCH MAKEUP | |
| Contract: 2607 Samples: L1935 -10 -11 -12 -13 -14 -15 -16 -17 | Blank: WG1949-1 |
| | Reference or Spike: WG1949-2 |
| | Duplicate: |
| Comments | |

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BATCH SUMMARY

| | |
|--|--|
| <i>Batch ID:</i> DXWG2028 | <i>Date:</i> 04 November 1999 |
| <i>Analysis Type:</i> Dioxin/Furan | <i>Matrix Type:</i> Tissue |
| BATCH MAKEUP | |
| <i>Contract:</i> 2607 <i>Samples:</i> L1825 -37 -40 L1991 -1 | <i>Blank:</i> <div style="text-align: right;">WG2028-1</div> |
| | <i>Reference or Spike:</i> <div style="text-align: right;">WG2028-2</div> |
| | <i>Duplicate:</i> |
| <i>Comments</i> | |

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00259

BATCH SUMMARY

| | |
|--|--|
| Batch ID: DXWG2079 | Date: 03 December 1999 |
| Analysis Type: Dioxin/Furan | Matrix Type: Oil |
| BATCH MAKEUP | |
| Contract: 2607 Samples: L2072 -4 | Blank: WG2079-1 |
| | Reference or Spike: WG2079-2 |
| | Duplicate: |
| Comments | |

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QA /06 Rev. 2. July 18/94

00260

BATCH SUMMARY

| | |
|--|--|
| <i>Batch ID:</i> DXWG2217 | <i>Date:</i> 28 December 1999 |
| <i>Analysis Type:</i> Dioxin/Furan | <i>Matrix Type:</i> Milk |
| BATCH MAKEUP | |
| <i>Contract:</i> 2607 <i>Samples:</i> L2043 -2 -8 -9 -10 -39 | <i>Blank:</i> WG2217-1 |
| | <i>Reference or Spike:</i> WG2217-2 |
| | <i>Duplicate:</i> |
| <i>Comments</i> | |

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QA /06 Rev. 2. July 18/94

00261

BATCH SUMMARY

| | |
|--|---|
| Batch ID: DXWG2294 | Date: 28 December 1999 |
| Analysis Type: Dioxin/Furan | Matrix Type: Tissue |
| BATCH MAKEUP | |
| Contract: 2607 Samples: L2044 -5 -6 -7 -8 | Blank: <p style="text-align: center; margin-top: 20px;">WG2294-1</p> |
| | Reference or Spike: <p style="text-align: center; margin-top: 20px;">WG2294-2</p> |
| | Duplicate: <p style="text-align: center; margin-top: 20px;">WG2294-4</p> |
| Comments: <ol style="list-style-type: none"> 1. Sample L2044-8 (99VN325) had low surrogate recoveries for the hepta dioxin, hepta furan and octa furan surrogates. However, there was insufficient sample (<0.5 g) to repeat the analysis. Further, the authentic hits for heptas and octas in this sample contribute little to the overall TEQ. If you feel a repeat analysis is required please notify us. | |

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BATCH SUMMARY

| | |
|---|--|
| Batch ID: DXWG2640 | Date: 16-Mar-2000 |
| Analysis Type: Dioxin & Furan | Matrix Type: Milk |
| BATCH MAKEUP | |
| Contract: 2607 Samples: L1936 -13 | Blank: WG2640-101 |
| | Reference or Spike: WG2640-102 |
| | Duplicate: |
| Comments: 1. | |

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262A

Appendix A3

**Forestry Department
Prepared Projects:
Thua Thien Hue Province
(Translation)**

FORESTRY DEPARTMENT PROPOSED PROJECTS: THUA THIEN HUE PROVINCE

1. Review of Requirements for Forestry Development in Aluoi

During the March 2-3, 1999 Aluoi Project Workshop, Mr. Tran Huu Banh, Director of the Thua Thien Hue Forestry Development Department, made the following comments:

Historically, forestry activities in Aluoi District were undertaken by:

- Aluoi Logging Camp managed 31,682 ha forest and forest land in Nam Huyen (adjacent to Nam Dong district), and had the responsibilities to exploit timber and to re-forest. In the previous years, the yearly timber exploitation was 1,500 to 2,000 m³. The forest was closed in 1998. From 1993 until now, project 327 helped mainly to protect and develop the forest.
- Huong Giang Logging Camp managed 4,357 ha, and had responsibilities to exploit an average of 1,000 m³/year of timber, and to maintain forest protection and restoration.
- The Management of Afforestation for Protection of the Upper Song Bo River was responsible for 18,665 ha of forest. Main responsibilities were management, protection and re-forestation.
- The Aluoi Division of the Forest Inspection Service, managed the forest and forest lands not yet assigned to any organizations, guided the program of “settled agriculture, settle down to sedentary life” and of planned afforestation (PAM).

Re-forestation activities from 1975 until the present are as follows:

| | Σ | Budget | Settled Agriculture Settle Down to Sedentary Life | Project 327 | PAM |
|---------|----------|--------|---|----------------|-------|
| Total | 3,517.9 | 569.2 | 1,433.8 | 1,144 | 370.9 |
| Acacia | 752.7 | 49.4 | 213.1 | 473.5 | 16.7 |
| Cannel | 1,621.8 | 9.0 | 1,224.7 | 190.5 | 201.6 |
| Pine | 806.4 | 501.3 | | 286.7 | 18.4 |
| Ban dia | 193.3 | | | 193.3 | |
| Trau | 143.7 | 9.5 | | | 134.2 |

In 1975, the tree coverage of Aluoi district reached 50% (58.802 ha/116.642 ha). In 1999, it increased to 53.4%, as a result of reforestation.

Natural forests in Aluoi are being gradually better managed and protected. There are fewer problems of cutting forest trees to clear land for cultivation. In some communes, this problem has been eliminated, thanks to the “settled agriculture, settle down to sedentary life” program and other economical and social development programs for mountainous regions.

Regarding reforestation, insect infections and forest fires are two problems which must be considered. In 1998, a new and dangerous disease caused by a parasite called *Bursaphelenchus xylophus nikle* killed the nine to ten year old 3-leaf pine. As well, some scattered cinnamon trees died due to termite infection. In earlier days, there were insects which ate the pine leaves. Forest fires occur during the dry and hot season every year. If these fires cannot be extinguished in time, they expand to become major forest fires that destroy 3-leaf pine.

For the future, the following are plans for protection, restoration and development of the forest in Aluoi.

Management Targets: Based on the present situation of forest and forest land resources, the plan of forest development in the future of Aluoi district is as follows:

| | |
|------------------------------------|----------------|
| 1. Forest protection management: | 62,320 ha; |
| - Natural forest: | 58,802 ha; |
| - Reforestation: | 3,518 ha; |
| 2. Forest restoration and nursing: | 22,076 ha; |
| Restored forest: | 2,076 ha; |
| IC land: | 20,000 ha; and |
| 3. Afforestation: | |
| 50% IA + IB land: | 5,500 ha. |

Management Actions:

1. Forest protection management: There is a need to protect the natural forest and to undertake reforestation for environmental protection, particularly in the Upper Watersheds of the Huong, Bo, O Lau, and A Sap Rivers. Special care and attention is in risky areas which are easily damaged, especially the areas along the stream banks, and in streams adjacent to human inhabitants. Such areas are easily reclaimed to make farms. The best way to deal with such areas is by encouraging involvement of the nationalized forest protection management and the local community.
2. Nurture and restoration of the forest: Special care is required for restored natural forests to promote forest survival.
3. Reforestation: Lands for reforestation are land categories IA, IB with a high slope and unable to grow industrial crops. Forest trees that can be used for reforestation include 3-leaf pine, *Acacia*, native trees (as stonewood, *Hopea*, Uoi, Mo, *Dipterocarpus*) mixed with industrial trees such as jack-tree, lemon tree, orange, peach, cinnamon, tea, and coffee. Reforestation targets of:



- 1,600 trees/ha should include 600 specialty trees and 1,000 support trees (for shade canopy). In addition to centralized reforestation, reforest the land in combination with agriculture, forest gardens, and domestic gardens.

Preliminary Investment Calculations:

The duration of the project is ten years (1 unit: 1 million VND):

- state-managed forces: 30 persons x 10 million VND/year x 10 years = 3,000;
- workers hired by the piece for forest protection: 10,000 ha x 10 years x 50,000 VND = 5,000;
- nurture and restoration of the forest: 22,000 ha x 1 million VND/ha = 22,000;
- reforestation: 5,500 ha x 2.5 million VND/ha = 13,750; and
- management fee 10% = 4,375

Total = 48,125 million VND.

Average = 4,812 million VND/year.

Implementation:

After identifying an investigator, the Department of Agriculture and Rural Development Thua Thien Hue will contract the Aluoi Logging Camp to lead the project, according to the following procedures:

- Aluoi Logging Camp will study the project, and submit a work plan to the Peoples' Committee of TT Hue for approval;
- based on the Annual Budget, Aluoi Logging Camp will contract the Agriculture and Forestry Investment Organization to design the project; the Division of Forest Development will consider and decide; the project will then go to the Department of Agriculture and Rural Development for the approval by the Peoples' Committee of the Province; and
- the Division of Forest Development will have the responsibility to inspect, supervise, check and take over the implementation of the work.

2. Reforestation Project for Protection of the Aluoi District in the period 1999 – 2010 (Hue, May, 1999)

General Information

Project Location

The project is to be carried out in nine communes: A Roang, A Dot, Huong Lam, Huong Phong, Dong Son, Phu Vinh, Hong Thuong, Hong Thai and Son Thuy.

The project will encompass 25 small regions: 1054, 1055, 1066, 1067, 1068, 1071, 1073, 1074, 1075, 1088, 1089, 1091, 1092, 1093, 1094, 1107, 1108, 1109, 1110, 1111, 1117, 1118, 1119, 1120.

Operational organization: Peoples' Committee of Thua Thien Province Hue.

Project leader: Management Board of Afforestation for Protection of Aluoi Logging Camp.

Address: Son Thuy Commune - Aluoi District.

Total Value of Planned Investment:

Total capital: 18,230 million VND ~ 1,302,142 USD.
Of which:

Borrowed capital: 4,140 million VND ~ 295,714 USD.
NS capital: 14,090 million VND ~ 1,006,428 USD.

Project duration: Year 1999 - Year 2010.

Source of funds: International funding.

Terms of the Project

The project is proposed to fully utilize the productive capacity of the land in the project area, to mobilize local centralized laborers to build and develop the forest in the region, with the following strategic objectives:

1. to maintain the present amount of forest, to restore the forest, and to reforest the land increasing the percentage of forest cover, thereby promoting environmental security, decrease natural disasters, increase the protective capacity, and protect the border corridor;

2. to make effective use of the denuded land and bare hills, create jobs for manual workers, reduction of famine and poverty, increase income of the people in the project target area, and make life stable for the people participating in the project; and
3. to supply timber, firewood and forest products, develop the manufactured forest products industry, and help improve the economic and social development in the district.

The following are the targets proposed under the project:

- Forest protection management: 6,000 ha/year;
- Forest nursing: 3,000 ha/year;
- Protective afforestation 2,000 ha;
- Productive and industrial afforestation: 800 ha; and
- Forest care: 6,600 times/ha.

Project implementation:

| Order Number | Description | Unit | Total (ha) | Period | | | |
|--------------|---------------------------------|------|------------|-----------|-----------|-----------------|-----------------|
| | | | | Year 1999 | Year 2000 | Years 2001-2005 | Years 2006-2010 |
| I. | Management of forest protection | ha | 72,000 | 2,500 | 6,500 | 33,000 | 30,000 |
| 1 | Natural forest | ha | 50,000 | 1,500 | 5,500 | 23,000 | 20,000 |
| 2 | Afforestation | ha | 22,000 | 1,000 | 1,000 | 10,000 | 10,000 |
| II. | Forest nursing | ha | 3,000 | 300 | 300 | 1,500 | 900 |
| III. | Afforestation | ha | 2,800 | 215 | 285 | 1,375 | 925 |
| 1 | Protective forest | ha | 2,000 | 200 | 200 | 1,000 | 600 |
| 2 | Productive forest | ha | | | | | |
| | - Industrial specialty | ha | 500 | | 50 | 250 | 200 |
| 3 | Industrial trees | ha | 240 | 15 | 25 | 100 | 100 |
| | - Sugar cane | ha | 130 | 10 | 20 | 50 | 50 |
| | - Rubber | ha | | | | | |
| | -Coffee | ha | 110 | 5 | 15 | 50 | 40 |
| 4 | Fruit trees | ha | 60 | | 10 | 25 | 25 |

Specific Terms of the Project

Aluoi Logging Camp project target area is located to the West of Truong Son mountains range, Province of Thua Thien Hue at geographical coordinates:

- from 16° to 16°23' North latitude; and
- from 107°15' to 107°35' East longitude:
 - The East is adjacent to Nam Dong district;
 - The South is adjacent to the province of Quang Nam;
 - The West is adjacent to Laos People's Democratic Republic; and
 - The North is adjacent to Nham commune and A Ngo commune of Aluoi district

Social and economic situation in the project target area are shown below:

- 9 communes, 49 villages;
 - Total population: 11,370 people;
 - Nationality:
 - * Ta Oi: 995 households;
 - * Pa Co: 460 households;
 - * Kinh: 480 households;
 - Total labourers in the projected area: 6,390 people:
 - * Agriculture: 5,200 people;
 - * Forestry: 950 people; and
 - * Others: 240 people.
- Average income: 65,000 VND/person/month.

The project target area has three main highways:

- * National highway #19B from North to South of Aluoi district;
- * National highway #49 connects Aluoi district with Hue City; and
- * Highway #74 from Aluoi to Nam Dong district.

Land area and natural resources:

a) Area of the project target district:

| | | Protective (Very essential+Essential) | Productive |
|--------------------|-----------|---------------------------------------|------------|
| Total area: | 23,793 ha | 18,907 ha | 4,886 ha |
| of which: | | | |
| * Forest land: | 14,492 ha | 12,162 ha | 2,330 ha |
| - Natural forest: | 12,710 | 11,405 | 1,305 |
| - Rich forest: | 2,855 | 2,855 | - |
| - Average forest: | 4,843 | 4,843 | - |
| - Poor forest: | 4,829 | 3,559 | 1,270 |
| - Restored forest: | 183 | 148 | 35 |
| - Afforestation: | 1,782 | 757 | 1,025 |
| * Denuded land: | 7,732 ha | 5,809 ha | 1,923 ha |
| * Other land: | 1,569 ha | 936 ha | 633 ha |

b) Characteristics of forest resources and of the land

Forests can be classified into three categories: rich, average, and poor. Rich forests are concentrated in the high mountains with high slopes in remote places having poor access and transportation. Average forests are distributed on the steep slopes and were devastated by herbicides during the war and have been exploited for many years. Poor forests are concentrated on the hills and streams near the settled areas, are heavily exploited, and are strongly influenced by humans. Beside natural forest, logging camp has also planted 1,782 ha with the following species: Cinnamon, 3-leaf pine, sen, *Acacia*, black cassia, mo, and boi loi.

The following are the important management actions to support the project objectives.

- **Forest Protection Management:** To effectively manage the natural forest and carry out reforestation, it is necessary to invest in infrastructure such as repairing the transportation systems, building forest protection management stations, forest fire watch-towers, anti-fire corridors, forest signs, management of protected areas.
- **Forest Nursing and Rehabilitation:** The target is very poor forest, restored forest and land with bushes interspersed with timber trees.
- **Reforestation:** Investment priority is protective reforestation in strategic areas so as to increase forest cover and restore the protective function. In addition to protective

reforestation, a second objective is productive reforestation to supply raw materials and specialty products and develop industrial tree plantations such as sugar-cane, coffee and fruit trees.

Forest Protection Management Methods

Building the borderline systems, establishing a forest protection convention, co-ordinate with the local government to publicize and organize the execution of the plan. Households are hired for protection management. A yearly average of 6,000 ha are managed for protection.

Reforestation Methods

A total area 2,000 ha of denuded land, bare hills and mountains (IA, IB) is for protection forest. They include small regions along the national highway #49, #14. These small regions are: 1054, 1055, 1067, 1066, 1075, 1073, 1088, 1069, 1107, and 1109.

Species for cultivation include mainly *Bassia*, *Acacia*, cinnamon, and some native trees from natural forest.

Due to terrain conditions (steep slopes) in the project target area, the technical methods of reforestation are in band, with the density depending on species of trees (1,100 trees/ha - 1,600 trees/ha).

Beside the protective reforestation, the project target area still has the potential capacity of having 800 ha for productive reforestation and industrial trees such as:

- forest with raw material specialty: 500 ha;
- industrial trees: 240 ha;
- sugar-cane: 130 ha;
- coffee: 110 ha; and
- fruit trees: 60 ha.

Forest Nursing and Rehabilitation Methods

This activity targets the very poor forest, restored forest, or land supporting bushes with scattered timber trees.

- nursery area: 3,000 ha.

Methods include confirming the nursery area border, setting up of management files, organizing the management of areas requiring protection, clearing the land for tree development, and providing reasonable nutrition. In forests where tree distribution (density) is irregular, it will be necessary for supplementary cultivation.

Investment Requirements

Total investment capital for the period 1999 - 2010: 18,230 million VND.

Quotation in order of articles (million VND):

- piece-management of forest protection: 3,600;
- forest nursing: 3,000;
- afforestation: 7,540;
- forest care: 1,980;
- infrastructure construction: 800;
- design cost: 350; and
- management: 960.

Quotation in order of funding sources and time (million VND):

| | Total | 1999 | 2000 | 2001-2005 | 2006-2010 |
|--------------------|--------|-------|-------|-----------|-----------|
| Total | 18,230 | 1,177 | 2,145 | 8,690 | 6,225 |
| - Budget | 14,090 | 1,020 | 1,605 | 6,840 | 4,625 |
| - Borrowed capital | 4,140 | 150 | 540 | 1,850 | 1,600 |

Project Benefits

Strategic investment in forest protection management, the forest nurseries and reforestation will assist in moderating the local climate. The project will contribute to reduced erosion, limit droughts and floods, and will gradually improve the environment not only in Aluoi District but also in the whole province.

The new reforestation project for the period 1999 – 2010, combined with “settled agriculture, settle down to sedentary life” programs, will alleviate famine and poverty, will encourage productive land use, and stimulate positive economic and social changes.

3. Forest Construction for Protection of Upper A-Sap River, Aluoi District, Province of Thua-Thien Hue

Project Location

Including the watershed area of the upper A-Sap river (in Viet Nam terrain) at geographical coordinates:

- from 16°03'15'' to 16°23'11'' North latitude; and
- from 107°05'16'' to 107°23'00'' East longitude.

Situated within 17 communes of the Aluoi district, the area has the boundaries as follows:

- North and North West adjacent to the basin of Dakrong river (Hong Thuy commune);
- East and North East adjacent to the basin of Bo river; and
- South and West adjacent to the People's Republic Democratic Laos.

Management Committee

- Head of the project: Aluoi Logging Camp; and
- Executing Agency: Peoples' Committee of the Province of Thua Thien Hue.

Total Investment Capital

- 4,956 million VND = 1,700,000 USD.

Project Duration

- 1999 - 2010.

Source of Capital

- International funding.

Project Description

A Sap River basin is situated in the western portion of Thua Thien Hue Province, with a total natural area of 43,868 ha, which is classified as follows:

- Land with forest 21,386.0 ha;
 - + Rich forest 5,964.0 ha;
 - + Average forest 7,201.0 ha;
 - + Poor forest 5,680.0 ha;
 - + Restored forest 1,309.5 ha;
 - + Afforestation 1,231.4 ha;
- Land without forest 17,516.2 ha;
 - + Land with moor and grass (IA) 5,702.4 ha;
 - + Denuded land with bushes (IB) 4,005.1 ha;
 - + Denuded land with scattered timber trees (IC) 7,808.7 ha; and
- Other land 4,966.8 ha.

The A Sap River provides water supply to about 2,000 ha of agricultural land in the area and to more than 27,000 people in 17 communes in the Aluoi District. A Sap River water supplies are inadequate during the dry season, and the surface water can be contaminated, directly influencing the lives of local people. Problems related to conversion of forest lands into farms, illegal reclamation, and forest fires combine to reduce forest area and decrease forest quality. In the rainy season, the steep slopes and lack of vegetation cover contribute to soil erosion. Downstream rivers, lakes, and agricultural lands fill up with deposits of silt. The net effect is serious loss of life and damage to government and people's properties.

Inhabitants of the A Sap watershed are distributed along both sides of the national highway #14 with 4,804 households and a total population of 27,168 people. The majority of the population is the Pa Co, Ta Oi, Ka Tu, Van Kieu, Pa Hy which account for 75.5% of the total population of the district.

The area available for cultivation is low. Farm yields are also low, producing an average amount of 116kg food/person/year; this is only enough for seven months of the year, resulting in chronic food shortages.

The infrastructure system including transportation, power supply, education, health, communication, culture, and information are inadequate due to poverty.

There are serious unemployment problems in the area. Thus it is important to design plans to create jobs in order to increase the people's income.

For the above reasons, The Peoples' Committee of Thua Thien Hue Province, affirm that forest construction for protection of the basin of upper A-Sap river is very important. The purpose is to protect the current forest area, and to increase the quality and quantity of the forest by the application of appropriate forestry and biological methods.

By the year 2010, reforestation of the denuded land and bare mountains will cover 3,196 ha and the nursing and restoration of natural forest on denuded land scattered with timber will reach 7,572 ha. The forest area in the project target regions will increase from 17,716 ha to 28,484 ha, and improve the forest coverage from 48.7% to 65% of the A Sap Basin area.

Social benefits from the project will include stabilizing the lives of local people, improvements in the quality of life, development of a forest laborer work force, and restrictions in the illegal cutting of the forest trees.

Specific Terms of the Project

- | | |
|---------------------|------------|
| Total natural area: | 43,868 ha; |
| Of which: | |
| • Forest land: | 36,245 ha; |
| • Protective land: | 32,851 ha; |
| • Productive land: | 3,394 ha; |

- Agricultural land: 5,582 ha; and
- Others: 2,041 ha

Protective forest includes 36 small zones with a total areas of 32,851 ha; the project aims only at the very important and important protective forest system. The less important protective forest and non-forest land are being addressed through project 327 which is being carried out in the watershed.

The operational amount of the project target areas, developed in accordance with the protective areas, is as follows:

| Order Number | Description | Unit | Total Area | Protective Area | |
|--------------|--------------------------------|-----------|------------|-----------------|-----------|
| | | | | Very Essential | Essential |
| I. | Forest construction | ha | 28,484 | 18,128 | 10,356 |
| 1 | Forest protection | ha | 17,716 | 13,738 | 3,978 |
| 2 | Forest nurture and restoration | ha | 7,572 | 3,885 | 3,687 |
| 3 | Afforestation | ha | 1,861 | 505 | 1,356 |
| 4 | Forest garden-Forest farm | ha | 1,335 | | 1,335 |
| II. | People moving | household | 278 | | 278 |

Project duration: 1999 - 2010.

Project Methods

Forest Protection: Area 17,716 ha

Targets rich forest, average forest, poor forest, restored forest, old reforestation areas and part of the denuded lands with small surface areas, remote areas with steep slopes, scattered in all small regions in the project target area.

Technical means: Keep forest management records, put up necessary forest signs, assign households and communities to manage and protect the forest

Project duration: 1999 - 2010;

- 1999 - 2000 Design the project, put up the forest signs, and project implementation.

Nurture and Restoration of Natural Forest: Area 7,572 ha

Of which:

- 1999 - 2000: 2,100 ha;
- 2001 - 2005: 3,500 ha; and
- 2006 - 2010: 1,972 ha.

Targets agricultural land with scattered timber trees IC, remote and high denuded land with bushes. Includes these small regions: 1022, 1025, 1026, 1027, 1038, 1039, 1040, 1041, 1036, 1037, 1035, 1042, 1051, 1070, 1069, 1073, 1089, 1091, 1092, 1093, 1108, 1120.

Technical means: Make the most of the ability for restoration, develop concrete plan for nurture.

Project duration: From 1999 to 2010. Each year, design and carry-out work increase 700 ha. After six years, shift to protection.

Afforestation: Area 1,861 ha

Total area for afforestation is allocated as follows:

- 1999 - 2000: 600 ha;
- 2001 - 2005: 1,000 ha; and
- 2006 - 2010: 261 ha.

Target: Denuded land, grass, denuded “lands with bushes” with convenient and favorable terrain, slope degree <25°, convenient transportation. They belong to the following small regions: 1019, 1021, 1025, 1037, 1036, 1041, 1069, 1073, 1089, 1091, 1093, 1108, 1120;

Technical means: Trees planted must be compatible with terrain conditions; and

Work progress: 1999 - 2006: Each year grow 200 ha.

Take Care of the Afforestation: Area 1,861 ha

Total afforestation: 1-5 year old, currently exists in the project.

Forest Garden, Forest Farm: Area 1,335 ha

Includes small regions: 1022, 1035, 1092, 1108. Depending on the terrain conditions, grow agricultural trees combined with forest trees.

Implementation

Aluoi Logging Camp, will assume the responsibility for project implementation, and will be appointed the principal investigator of the project.

Economic policies will be designed to stimulate new opportunities, reclamation of waste land, with financial support of the families participating in the reclamation from six months to one year and tax exempt status for the first three years.

It will be necessary for the favorable treatment of the workers participating in the project.

Based on the ability of the household, each household will be allocated 3 to 5 ha of natural forest for protection management, 2 to 3 ha forest free land for reforestation and forest nursing and restoration.

The participating households will be directly supported by the government financially for the work of reforestation and forest restoration.

Forest building is related to the program “settled agriculture, settle down to sedentary life”.

Presently, in the project target area, there are 278 households in ten communities. They need “settled agriculture, settle down to sedentary life” to stabilize their lives. The households will require financial support from the government, as well as support from the departments of forest inspection, public security service, post office, culture, and information.

Financing

Investment capital: (million VND) 14,956;

Of which:

- Forest protection: 5,452;
- Forest nurture and restoration: 1,893;
- Afforestation and afforestation care: 4,838;
- Forest garden, forest farm 1,068;
- Fixed cultivation fixed home: 472;
- Management fees: 1,097; and
- Funds held in reserve 1%: 136.

Investment progress plan:

- 1999 - 2000: 4,236;
- 2001 - 2005: 6,448; and
- 2006 - 2010: 4,272.

Total investment capital: 14,956.

(Fourteen thousand nine hundred fifty six million VND)

An average of 900 laborers are needed per year for forest building. Because reforestation is seasonal, it will be necessary to recruit thousands of casual laborers for the afforestation.

Benefits

a. Protection Effect and Environment Effect

By 2006, 1,861 ha land would be reforested (from denuded land); 7,572 ha bare land scattered with timber trees would be nursed and restored and 18,303 ha natural forest would be protected, thereby gradually increasing the degree of forest coverage.

By 2010, the coverage of the forest would extend over 60% of the watershed area.

Environmental benefits will include water regulation and limits to damages caused by flooding and storms. As well, the climate would be regulated (make the climate milder).

b. Economic effect

With nearly 2,000 ha afforestation and nearly 20,000 ha natural forest, there will be increased capacity for supplying timber and forest products. The quantity of forest products will increase 10% TO 20%.

Restrict Yearly Flood

Increase the income of local people, produce enough food, improve the standard of living of the poor.

c. Social Effect

Forest building is bound to the work of “fixed culture fixed home” wiping out the “moving cultivation moving home”. It makes people lives get settled.

Create jobs for thousands of casual laborers, and reduce unemployment.

d. Effect on National Defense

Forest building is bound to the building of transportation system which is convenient to moving and inspecting the Viet Nam - Lao PDR boundary. At the same time, thanks to the economic and social effects, the people's cultural standard increases which contributes to national security.

4. Afforestation for Protection of the Road #49 in Thua Thien Hue Province

1. **Project name:** Afforestation for protection of the Road #49.
2. **Proposed project location:** In five communes of:
 - Binh Dien, Hong Tien (Huong Tra district); and
 - Hong Ha, Huong Nguyen, Son Thuy (Aluoi district).
3. **Executing, line and acting agency and responsible authority of the project:** - Afforestation management board of the Road #49.
4. **Purposes of the afforestation:** Resuming the ecological environment, bringing into play the forest protection abilities and combining timber, fire wood business.
5. **Project duration:** 30 years (1999 - 2030).
6. **Estimation of total project cost:** 2,900,000 USD.
7. **Project technical context:**
 - a. Project target area for afforestation:
 - Area: 2,000 ha; and
 - Current condition: Denuded land, bare hill (due to forest was destroyed by chemical poison substance).
 - b. Species need for afforestation: Acacia, Pine, Hopea, Parashorea, Dipterocarpus.
 - c. Nursing seedling:
 - Number of seedling required by year: 500,000;
 - Raising method: From seed and seedling sets; and
 - Cost per seedling: 0.1 USD.
 - d. Land preparation plan:
 - Reclaiming land in band;

- Digging hole by handicraft method with size of: 40 x 40 x 40 cm; and
 - Applying fertilizer when preparing land.
- e. Production plan of timber: 10 m³ / ha / year.
- f. Project cost:
- Afforestation cost in the first ten years (200 ha / year), average cost per one year:

$$2,000 \text{ ha} \times 300 \text{ USD} = 600,000 \text{ USD};$$
 - Average cost of taking care afforestation after planting: 100 USD / ha / year:

$$2,000 \text{ ha} \times 3 \text{ years} \times 100 \text{ USD} = 600,000 \text{ USD};$$
 - Average managing cost for afforestation protection: 20 USD / ha / year;

$$2,000 \text{ ha} \times 30 \text{ years} \times 20 \text{ USD} = 1,200,000 \text{ USD};$$
 and
 - Infrastructure construction: = 500,000 USD.

The payment schedule is as follows:

| Year | Total (USD) | Payment Schedule for: | | | |
|-------------------|-------------|-----------------------|------------------------------|-------------------------|----------------|
| | | Afforestation | Taking Care of Afforestation | Managing and Protection | Infrastructure |
| 1999 | 164,000 | 60,000 | 20,000 | 4,000 | 100,000 |
| 2000 | 188,000 | 60,000 | 40,000 | 8,000 | 100,000 |
| 2001 | 212,000 | 60,000 | 60,000 | 12,000 | 100,000 |
| 2002 | 236,000 | 60,000 | 60,000 | 16,000 | 100,000 |
| 2003 | 240,000 | 60,000 | 60,000 | 20,000 | 100,000 |
| 2004 | 144,000 | 60,000 | 60,000 | 24,000 | |
| 2005 | 148,000 | 60,000 | 60,000 | 28,000 | |
| 2006 | 152,000 | 60,000 | 60,000 | 32,000 | |
| 2007 | 156,000 | 60,000 | 60,000 | 36,000 | |
| 2008 | 160,000 | 60,000 | 60,000 | 40,000 | |
| 2009 | 104,000 | | 40,000 | 44,000 | |
| 2010 | 88,000 | | 20,000 | 48,000 | |
| 2011 | 72,000 | | | 52,000 | |
| From 2012 Onwards | 836,000 | | | 836,000 | |

8. General

1. Economic and social situation:

Total farmer households: 1,477;
Total population: 7,956; and
Total labourers: 3,489.

Average food amount: 150 kg/ capita.

Land area for agricultural production:

1 crop of paddy field: 22 ha;
2 crops of paddy field: 66 ha;
Paddy field planted in hilly areas: 64 ha; and
Vegetable land: 265 ha.

2. Environment condition:

| Item | Total Area (ha) | Land for Production Work | Land for Protection Work |
|--------------------|-----------------|-----------------------------|-----------------------------|
| Total Natural Area | 29,417 | 1,892 | 27,525 |
| Of which: | | | |
| - Natural Forest | 14,636 | 716 | 13,920 |
| - Afforestation | 762 | 21 | 741 |
| - Denuded Land | 13,554 | 1,142 | 12,412 |
| - Other Land | 465 | 14 | 451 |

Department of Agriculture and Rural Development.

5. Conservation of Animals, Plants, and Natural Forest

Thua Thien Hue Province has a total natural area of 500,920 ha with forest and forest land area totaling 337,040 ha (67% of the area of the whole province); this includes three categories of forest: special forest, protective forest and productive forest. Presently, Thua Thien Hue has already formed a natural preservation region called the garden of Bach Ma - Hai Van (22,000 ha), situated 70 km south from Hue City. During 1999, the natural preservation system will be extended to the West of Hue City to cover 24,750 ha of the Upper Bo River region (Dong Ngai), creating the green belt on the West, connecting with Laos.

The Dong Ngai region is 1,774 m above sea water level, and supports forest covering 19,000 ha which support many rare and precious species of animals (e.g., rhinoceros, white Lophura, *Panther tigris*, bears), as well as high plant diversity.

The following research proposal has been developed to enhance the contribution of the original forest for Viet Nam, to protect the green corridor of the Truong Son mountain range, and to develop a scientific plan and research program for this natural preservation project.

Pre-project planing will be executed within 6 months (2nd quarter and 3rd quarter of 1999). The anticipated project of the planned area of 24,750 ha includes 18,830 ha forest land with 24 small regions belonging to Aluoi and Phong Dien districts. Pre-project planning will entail:

- doing research, prepare the project, investigate, plan the above animal and plant conservation areas and evaluate ecological conditions;
- developing programs for the conservation areas;
- gathering data and prepare the project document for submission to the Ministry of Agriculture and Rural Development; and
- seeking assistance from expert advisors within Viet Nam and from abroad who specialize in the establishment of conservation areas.

Budget Estimate

Expenses

| | |
|---------------------------|-------------------------------|
| • Expert's salaries | 36,000,000 VND |
| • Investigator's salaries | 70,000,000 VND |
| • Equipments | 50,000,000 VND |
| • Others | <u>14,000,000 VND</u> |
| | <u>170,000,000 VND</u> |

Project Benefits

Increasing the biodiversity conservation area in Thua Thien Hue will positively contribute to the preservation of rare and precious animal and plant species, thus preventing the direct extermination. The project is consistent with Vietnamese laws requiring the rebuilding of the natural environment, protecting the essential upper river areas, and contributing to the management of natural conservation areas.

6. Biodiversity Investigation of the Upper Bo River as a Foundation for the Establishment of the Dong Ngai - West Phong Dien Conservation Area

Project Duration

- 16 months; and
- From September, 1999 to November, 2000.

Management

- Ministry of Agriculture and Rural Development; and
- People's Committee Thua Thien Hue.

Priority

- Maintenance, development and biodiversity preservation.

Organizations in Charge

- Department of Agriculture and Rural Development;
Address: 07 Dong Da, Hue Province. Tel: (054) 822563 – 828804.
Fax: 054. 828804; and
- Faculty of Science Hue
(Address: 27 Nguyen Hue, Hue. Tel: (054) 8454 – 822390. Fax: 8454-8224901).

Coordinated Organizations

- Faculty of Agriculture and Forestry, University of Hue;
- Faculty of Education, University of Hue;
- Faculty of Natural Science and Industry – National University of Hanoi;
- Center of Natural Resources, Environment and Industrial Biology, University of Hue;
- Department of Industrial Sciences and Environment, Hue Province;

- Division of Forest Inspection, Thua Thien Hue;
- Section of Agriculture, Phong Dien District; and
- Forest Inspection, Unit of Phong Dien District.

Scientific Personnel

- Nguyen Nghia Thin, PhD, Professor, National University of Hanoi; and
- Dang Huy Huynh, PhD, Professor, Institute of Biological Resources and Biology, Hanoi.

Board of Directors of the Subject:

- Ho Dang Vang, Assistant Director of the Department of Agriculture and Rural Development, Province of TT Hue;
- Ho Ky, Engineer: Assistant Head of Forestry Department;
- Department of Agriculture and Rural Development, Province of TT, Hue; and
- Vo Van Phu: Master of Science, Supervisor of Natural Resources and Environment, Faculty of Sciences, Hue University.

Secretaries:

- Nguyen Duy Chin, Faculty of Science, Hue; and
- Nguyen Dac Tao, Faculty of Science, Hue.

Principal Members of the Subject:

- Le Van Thang, Master of Science, Director of the Center of Natural Resources, Environment and Industrial Biology, University of Hue;
- Phan Anh, Faculty of Science, Hue;
- Ton That Phap, Botany, Science Student, Faculty of Science, Hue;
- Nguyen Hoang Loc, Industrial Biology, Faculty of Science, Hue;
- Mai Van Pho, Botany, Faculty of Science, Hue;
- Le Trong Son, Faculty of Science, Hue;
- Nguyen Mong, Natural Resources and Environment, Faculty of Science, Hue;

- Nguyen Minh Tri, Natural Resources and Environment, Faculty of Science, Hue;
- Ngo Dac Chung, Faculty of Science, Hue;
- Do Xuan Cam, Forestry, Faculty of Agriculture and Forestry, Hue; and
- Nguyen Xuan Hong, Social Studies, Faculty of Science, Hue.

Background

Thua Thien Hue has a forest and forest land of more than 337,000 ha, occupying 67% natural area of the whole province (more than 500,000 ha). In 1991 the government approved the formation of Bach Ma National Garden, 50 km south of Hue, with an area of 22,310 ha.

It is anticipated that by 1999, a plan will be submitted for approval of the establishment of Dong Ngai – West Phong Dien Preservation Region, situated 60 km from Hue to the West, with a projected area of 24,750 ha, and connecting the province green forest belt with Laos.

The Upper Bo River located in the West of Phong Ngai district (Phong Son, Phong My, Phong Thu) serves as an essential protective forest area, which has been subject to minimal human interference. In the area, there are hills and springs, and high mountains forming the high altitude landscape supporting unique ecological characteristics.

Dong Ngai is situated 1,744 m above sea level. The area of good protective forest is more than 19,000 ha. Thus, this forest has high biodiversity and includes many rare and precious species that other areas do not have.

In previous years, many kinds of animals were discovered and captured such as: *Panthera tigris*, *Helarctos malaganus*, *Bos gaurus*, *Pseudorynchetioides*, *Helobates*, *Pygathri*, various primates, and also *Lophura edwardsi*, *Lophura nycthemera*, *Arborophila runneopectus*, *A. merlini*.

We wish to investigate the biodiversity of the Upper Bo River to support the scientific foundation for establishing the natural preservation area of Dong Ngai-West Phong Dien.

Research Situation

In the world, the research of biodiversity and setting up of the scientific information for animals and plants for each district and region is a priority in the development strategy. Many summit meetings of the United Nations Organization (1972, 1992, 1997) have discussed biodiversity programs. Each year member countries, and the European Commission participated and signed an international convention about biodiversity, and the restriction of wild animals trade (CITES).

In Viet Nam, the national biodiversity program has been introduced as one of two strategies of environmental management since 1994. Since then, each district, province and each special region also has biodiversity research aimed at preservation and development of the biodiversity, and preservation of precious species.

One of the best measures of preservation and development of the biodiversity is *in situ* preservation. This means creation of the natural preservation region and national gardens.

Dong Ngai – West Phong Dien district is a strategic region for biodiversity preservation *in situ*. However, the research concerning animal and plant species, the biodiversity and the ecological relations in the area, have not been publicized.

Thus, biodiversity research for this region, and creation of a natural preservation area is necessary, important and urgent. The proposed activities will be undertaken to improve the scientific capability of the local environment officers.

Research Objective

- Prepare a complete list of animal and plant species and describe their living areas and distribution in the Dong Ngai – West Phong Dien.
- Understand the ecological diversity, the climate of small regions, and landscape in the whole area.
- Prepare a list of useful, common, rare and precious species for Thua Thien Hue, for the region of Central Viet Nam and for the country of Viet Nam.
- Prepare practical solutions for biodiversity preservation.
- Improve the science, the ability, and awareness of biodiversity preservation for the officers involved in carrying out the project and within the community located in the research region.
- Prepare a set of education and research materials.

Main Activities of the Project

- Collect and classify existing data and materials on biodiversity of the research area and in neighboring areas.
- Investigate the landscape, ecology, and natural conditions throughout the research target area. Divide the area into small ecological areas according to altitude, vegetation cover, and climate.
- Execute detailed investigations to determine their classification categories and their population in each area.
- Determine the structure of the ecological research system, the adaptation ability, and the unique regional elements of the biological population.

- Establish a plan of reasonable use, preservation and sustainable development for the animal and plant species in the Upper Bo River area.
- Organize a scientific conference to make use of the ideas from foreign experts.
- Develop scientific back-up and rationale for the Ministry of Agriculture and Rural Development to establish a natural reservation region for Dong Ngai – West Phong Dien and adjacent regions.
- Prepare a list of the status of animals and plant species and determine useful, rare and endemic species.
- Submit to all levels of government the ideas, advice, methods of reasonable use, preservation and sustainable development of the biodiversity of the natural preservation region of Dong Ngai while taking into account the socio-economic development of the people in the buffer areas.
- Undertake scientific exchanges with the experts in Viet Nam and in foreign countries.
- Prepare reports documenting the results (about 300 pages of materials).

Methods of Investigation and Research

- Apply special research methods for zoology, botany, ecology and the methods of forest investigation in order to carry out the project.
- Use the RRA (rapid rural assessment) methods of investigation and the methods of inter-branch investigation.
- Use the algorithm, matrix and microcomputer to process the data.

Anticipated Cost

| Title: Biodiversity Investigation of the Upper Bo River | Vietnamese Dong |
|---|-----------------|
| Total Fund Asked: 250,000,000 VND | |
| Anticipated Allocation: (unit: * 1,000 VND) | |
| Hire professionals | 175,000 |
| Overview the documents | 5,000 |
| Investigation of the entire area (8 persons * 15 days * 60,000 VND/person) | 7,200 |
| <i>Detailed Investigation of Biodiversity (30 officers)</i> | |
| Zoology | 50,000 |
| Botany | 40,000 |
| Social and ecological investigation | 11,000 |
| <i>Equipment Rental</i> | |
| (camera, apparatus for measure of level, altitude) | 5,000 |
| Hiring of the guides | 9,000 |
| Analyze and compare the samples | 20,000 |
| Complete the species list, compare the documents and control the samples | 15,000 |
| Film and film development (800-1,000 photos) | 3,300 |
| Establish the species distribution map | 9,500 |
| Personal Needs | |
| Plastic bags: 10 rolls * 60/roll | 600 |
| Sample glue | 500 |
| Tape: 200 rolls * 8/roll | 1,600 |
| Pins: 4kg * 50/kg | 200 |
| Chemicals (alcohol, formaldehyde, metylbran...) | 2,700 |
| Newspapers: 50kg * 2/kg | 1,000 |
| Clips (100) | 1,000 |
| Gas, car rental for field trip | 5,000 |
| Travelling expenses (Hanoi, Ho Chi Minh City) | 4,000 |
| Scientific conferences: 2 times | 10,000 |
| Stationary | 3,000 |
| Writing the sum-up report and checking and taking over | 5,000 |
| Management fee (10%) | 25,000 |
| Allowance for board of director and secretaries (5%) | 12,500 |
| Other expenses | 4,400 |
| Total of above 10 items: 25,000 * 1,000 VND | |
| (Two hundred and fifty million VND) | |