**STOPPING
WATER POLLUTION
AT ITS SOURCE**

**ACUTE LETHALITY DATA
FOR ONTARIO'S
INORGANIC CHEMICAL SECTOR EFFLUENTS**

**Covering the Period from
June 1990 to November 1990**

Ontario

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**ACUTE LETHALITY DATA FOR ONTARIO'S INORGANIC CHEMICAL
MANUFACTURING SECTOR EFFLUENTS
COVERING THE PERIOD FROM JUNE 1990 TO NOVEMBER 1990**

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**ACUTE LETHALITY DATA FOR ONTARIO'S INORGANIC CHEMICAL
SECTOR EFFLUENTS - COVERING THE PERIOD FROM
JUNE 1990 TO NOVEMBER 1990**

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Introduction

Under the MISA program, the Inorganic Chemical Sector was required to monitor its discharges (both process and cooling waters) for acute lethality to trout and to *Daphnia magna* by conducting laboratory toxicity tests. Specific details on the toxicity testing requirements may be found in the General Effluent Monitoring Regulation (Ontario Regulation 695/88) and the Effluent Monitoring Regulation For The Inorganic Chemical Sector (Ontario Regulation 395/89). For the purposes of the Monitoring Regulation, the Inorganic Chemical Sector is defined to include all direct discharging plants, primarily engaged in the processing, manufacturing, packaging or blending of inorganic materials. The majority of the plants are located in southern Ontario. The products of the Inorganic industry include acids and bases, caustic soda, soda ash, fertilizers, explosives, carbon black, detergent additives, bleaches and industrial gases. Some of these are used as ingredients to manufacture other commercial products such as dyes, plastics and pharmaceutical. An overview of the sector is described in the publication "The Development Document For The Effluent Monitoring Regulation For The Inorganic Chemical Sector, Env. Ontario July 1989".

Toxicity information collected under the MISA effluent monitoring program will form the most comprehensive database available on the Inorganic Chemical Sector and will be used toward the development of compliance limits for acute toxicity. This report presents the toxicity results of the second six months of self-monitoring, from June 1, 1990 to November 30, 1990, along with the results of Ministry inspection samples that were tested at the Ministry's laboratory in Rexdale. Toxicity tests of some intake waters were also submitted by industry and these have been included in this report. The results of toxicity testing for the first six months of industry monitoring were reported in "Acute Lethality Data For Ontario's Inorganic Chemical Sector Effluents Covering The Period From December 1989 To May 1990, Env. Ontario 1992". Although this report is focused on the second six months of monitoring, the Conclusion section does provide a brief overview on the complete year of monitoring.

Background

In general, toxicity tests are used as a rapid technique to assess the potential impact of complex effluents on the aquatic environment. The tests have been designed to answer whether or not an effluent produces an effect on a biological system and the degree of the measured effect. In acute lethality testing, aquatic organisms are exposed to undiluted effluent, and several effluent dilutions, for a fixed period of time. The toxicity test protocols require a 96 hour exposure for trout and a 48 hour exposure for *Daphnia*. For both tests, the number of organisms which have died is the measured parameter. The LC50 or the estimated concentration of effluent that causes 50 % mortality is generally used as the quantitative measure of toxicity. For complex waste water samples, the LC50 measurement is usually expressed as a percentage of effluent volume. For example, a 96

No. Name Location

Ontario's Inorganic Chemical Sector

1. Albright and Wilson Americas Inc., Port Maitland
2. Allied Chemicals Canada Inc., Amherstburg
3. CIL Inc., Cornwall
4. CIL Inc., Courtwright
5. Cabot Canada Ltd., Sarnia
6. Canadian Liquid Air Ltd., Courtwright
7. Columbian Chemicals Canada Ltd., Hamilton
8. Cyanamid Canada Inc., (Niagara Plant)
Niagara Falls
9. Cyanamid Canada Inc. (Welland Plant)
Niagara Falls
10. Exolon-Esk Company of Canada Ltd., Thorold
11. Explosive Technologies Int. Ltd., North Bay
12. Fiberglas Canada Inc., Sarnia
13. General Chemicals Ltd., Amherstburg
14. International Minerals & Chemicals,
Port Maitland
15. Liquid Carbonic Inc., Courtwright
16. Liquid Carbonic Inc., Maitland
17. Nitrochem Inc., Maitland
18. Norton Canada Inc., Niagara Falls
19. Portek Insulations Ltd., Sarnia
20. Puritan Bennett Canada Ltd., Maitland
21. Stanchem, Cornwall
22. Sulco Chemicals Ltd., Elmira
23. Union Carbide Canada Ltd., Moore TWP
24. Union Carbide Canada Ltd., Sarnia
25. Union Carbide Canada Ltd., Sault Ste. Marie
26. Union Carbide Inc., Welland
27. Washington Mills Electro Minerals, Niagara Falls
28. Washington Mills Ltd., Niagara Falls
29. Welland Chemical Ltd., Sarnia

hour LC50 = 35 % can be explained as the percent by volume of effluent required to kill 50 % of the test fish within a 96 hour exposure period. LC50 percentages are inversely related to the degree of toxicity; lower numbers representing greater effect. Effluent samples where no animals die in full strength (100 %) effluent or in any of the diluted concentrations are considered non-lethal. Non-lethal effluents are considered less likely to produce adverse impacts in the environment after dilution. For bioassays where less than half the test animals die in full strength effluent, and the data does not support the calculation of an LC50, the acute lethality is usually reported as "LC50 > 100 % ". This designation indicates that mortalities occurred during the test, but the LC50 cannot be accurately calculated from the data and is probably greater than full strength effluent.

As directed by the Effluent Monitoring Regulation, the Inorganic Chemical Sector was required to collect and provide information on its operations including analytical chemical characterization and toxicity analysis of its waste water discharges. The timing of toxicity sampling was arranged as much as possible to coincide with chemical characterization. The frequency of sampling was monthly for both toxicity test procedures on process effluents with the exception that if trout tests showed insignificant mortalities over three consecutive months then in subsequent months a single concentration trout test may be used. For cooling water effluent, the required frequency of sampling and testing was quarterly. All acute lethality testing by the Sector plants were conducted according to Ministry protocols (Protocol To Determine The Acute Lethality Of Liquid Effluents To Fish, Env. Ontario, July 1983 and *Daphnia magna* Acute Lethality Toxicity Test Protocol, Env. Ontario, April 1988). The regulations also required specific information on sampling and testing procedures for each bioassay, in addition to the mortality data. All data was reported in an electronic and hardcopy report. The Ministry's TOXDATA computer program was provided to industry as a method of managing toxicity data and as a route for data submission. Additional information on this computer program is provided in the publication titled " Toxicity Relational Database System TOXDATA User's Manual, Env. Ontario, May 1989".

Discussion

General

The Inorganic Chemical Sector plants submitted data for 42 sampling locations at a total of 26 plants for the second six months of monitoring. Starting in June 1990 and ending November 1990, a total of 388 trout and *Daphnia* toxicity test results were submitted by the plants. An additional 40 inspection tests were conducted by the Aquatic Toxicity Unit of Environment Ontario.

Liquid Carbonic Inc. (Courtright), Liquid Carbonic Inc. (Maitland), Puritan Bennett Canada Ltd. (Maitland), Union Carbide Canada Ltd. (Moore Twnshp), Union Carbide Canada Ltd. (Sarnia), and Union Carbide Canada Ltd. (Sault Ste. Marie) were all brought under

monitoring through regulation amendments after initial promulgation date. Therefore, acute toxicity data submitted beyond November 1990, for these plants, have been included in this report. Three companies, Allied Chemicals Canada Inc., Canadian Liquid Air Ltd., and Columbian Chemicals were not required to monitor for acute toxicity during the Monitoring Regulation period. These plants were considered exempt from acute toxicity monitoring since they did not discharge process effluent directly into the natural environment. Albright and Wilson Americas Inc. and General Chemical Canada Ltd. voluntarily submitted test results for acute toxicity tests conducted on intake water samples.

The data collected during this six months of monitoring indicated that the majority of the inorganic chemical sector's effluents were not acutely lethal. Over 88 % of the samples tested for trout acute lethality and 77 % of the samples tested for *Daphnia* acute lethality were non-lethal or had insignificant mortalities (LC50s > 100 % effluent). Most of the samples that were acutely lethal to trout and/or *Daphnia* originated from sites at the following seven plants: Cyanamid Canada Inc.(Welland plant), General Chemical Canada Ltd., Nitrochem Inc., Partek Insulations Ltd., Puritan-Bennett Canada Ltd., Union Carbide Canada Ltd.(Sarnia plant), and Welland Chemical Ltd. All these plants reported that one or more of their discharges were acutely lethal to *Daphnia* and/or trout, at least 50 % of the time when sampled.

Trout Test Results

Of the 193 samples that were tested for acute toxicity to trout, 144 (74.6 %) were not acutely lethal. The effluent samples collected from 7 of the 26 plants were consistently not acutely lethal. Companies included in the non-lethal effluent category were : Exolon-Esk Company of Canada Ltd., Explosive Technologies Int. Ltd., ICI Canada Inc.(Courtright), International Minerals & Chemicals, Sulco Chemicals Ltd., Washington Mills Electro Minerals and Washington Mills Ltd. An additional 27 samples, 11.4 % of total, resulted in LC50s > 100 %. Many of these tests had only one fish die during the test and may be interpreted as being not acutely lethal. Nine plants submitted data that showed their effluent samples were either non-lethal or had LC50s > 100 % throughout this six month period. This category included the following companies : Albright and Wilson Americas Inc., Cabot Canada Ltd., Fiberglas Canada Inc., Liquid Carbonic Inc.(Maitland plant), Stanchem, UCAR Carbon Canada Ltd., Union Carbide Canada Ltd.(Moore Twp), Union Carbide Canada Ltd.(Sarnia), and Union Carbide Canada Ltd.(Sault Ste. Marie).

Twenty-two samples, 11.4 % of the total number of samples tested, were acutely-lethal to trout (96 hour LC50 <100 %). All of the acutely lethal results were submitted by the following ten plants :Cyanamid Canada Inc.(Niagara Falls plant), Cyanamid Canada Inc.(Welland plant), General Chemical Canada Ltd., ICI Canada Inc.(Cornwall), Liquid Carbonic Inc.(Courtright), Nitrochem Inc., Norton Canada Inc., Partek Insulations Ltd., Puritan-Bennett Canada Ltd., and Welland Chemical Ltd.

Daphnia magna Test Results

Of the 195 samples tested for acute toxicity to *Daphnia magna*, 116 samples (59.5 %) were not acutely lethal. The effluent samples from three plants, Exolon-Esk Company of Canada Ltd., Explosive Technologies Int. Ltd., and ICI Canada Inc.(Courtright) were consistently not acutely lethal to *Daphnia* throughout the second six months of monitoring. An additional 35 samples (17.9 %) had 48 hour LC50s >100 %. Many of these samples had only one neonate die during the test, and might be interpreted as being not acutely lethal. Seven plants have one or more test results with an LC50 > 100 %. Included in this category were : Cyanamid Canada Inc.(Niagara plant), Liquid Carbonic Inc.(Maitland), Norton Canada Inc., Sulco Chemicals Inc., UCAR Carbon Canada Inc., Washington Mills Electro Minerals and Washington Mills Ltd.

Forty-four samples (22.6 %) were acutely lethal to *Daphnia* (48 hour LC50s < 100 %). The following sixteen plants reported that during this second six months of monitoring, one or more of their effluent samples was acutely lethal to *Daphnia*: Albright and Wilson Americas Inc., Cabot Canada Ltd., Cyanamid Canada Inc.(Welland plant), Fiberglas Canada Inc., General Chemical Canada Ltd., ICI Canada Inc.(Cornwall plant), International Minerals and Chemicals, Liquid Carbonic Inc.(Courtright plant), Nitrochem Inc., Partek Insulations Ltd., Puritan-Bennett Canada Ltd., Stanchem, Union Carbide Canada Ltd.(Moore Twp plant), Union Carbide Canada Ltd.(Sarnia plant), Union Carbide Canada Ltd.(Sault Ste. Marie), and Welland Chemical Ltd.

Conclusions

In general, the reporting of toxicity data by the industries went smoothly. The data was usually submitted accurately and according to schedule. Where the Ministry requested industry for data resubmission to correct data entry errors and/or for additional information, the companies complied. Where Ministry audit samples were collected and tested, the results were consistent with results submitted by industry.

The full year of MISA acute toxicity data for the Inorganic Chemical Sector indicated that the majority of inorganic chemical plant effluent samples were not acutely lethal. Although the majority of the samples were non-lethal, only a few companies could report that their effluents were non-lethal every time when tested. Only four of the twenty-six plants which submitted acute trout toxicity data had non-lethal effluents throughout the full year of monitoring. None of the plants were able to report their effluents were consistently non-lethal to *Daphnia* throughout the year. Overall, the effluents were more toxic to *Daphnia* than to rainbow trout. For the second six months of monitoring, twice as many plants reported *Daphnia* toxicity as did trout toxicity.

Over the full year, eight plants; Cyanamid Canada Inc.(Welland plant), General Chemical Canada Ltd., ICI Canada Inc., Nitrochem Inc., Partek Insulations Ltd., Puritan-Bennett

Canada Ltd., Union Carbide Canada Ltd.(Sarnia) and Welland Chemical Ltd. were in the category where at least 50 % of the samples collected from a discharge were lethal to *Daphnia* and/or trout.

For several of the toxic samples, a quick review of the matching analytical chemistry monitoring data has revealed some probable causes of the observed acute toxicity. Where this was possible, a brief explanation to the probable causes of toxicity are described below. The toxicity tests will detect harmful concentrations of chemical constituents in the effluents. Compliance with "end of pipe" limits for acute toxicity does not necessarily control the potential effects of environmental contamination that can be caused by loading of bioaccumulative substances. These substances are generally non-polar organic chemicals of high molecular weight and low water solubility or metals that can be accumulated in their organic form. For this industrial sector, several of these contaminants have been measured in some effluents at sublethal concentrations. This list includes dioxins, octachlorostyrene, hexachlorobenzene, lead, cadmium and mercury.

Cyanamid Canada Inc.,(Welland plant), Niagara Falls

Cyanamid Canada Inc. manufactures inorganic nitrogen and phosphorous products and discharges the wastewater into the Niagara River via Thompson's Creek and the Welland River. The Miller Creek discharge, during the second six months of monitoring , was consistently lethal to *Daphnia* and occasionally to trout. It is unclear at present to the causes of lethality. Cyanamid Canada Inc. has undertaken a study to evaluate all sources of toxicity at this site.

General Chemical Canada Ltd., Amherstburg

General Chemical Canada Ltd. produces soda ash (sodium carbonate) from common salt and the wastewater from the plant is discharged into the Detroit River via the Main Drain and North Drain. The North Drain is also used to discharge wastewater from the Genetron and Hydrofluoric acid plants operated by Allied Chemicals Canada Inc. The effluent samples from the Main Drain were consistently non-lethal to *Daphnia magna* and trout while the North Drain effluent samples were consistently acutely lethal to both species. For the year of monitoring, the trout bioassay LC50s ranged from 20 % to 40 % effluent, while all the *Daphnia* LC50s were reported as less than 10 % effluent. The alkaline condition of the North Drain wastewater could alone account for the lethal response reported in the bioassays. The pH measurements for the North Drain effluent were consistently above 11.5 on days when toxicity samples were collected. Usually water with a pH greater than 10.5 would be acutely lethal to both *Daphnia* and trout. General Chemical's effluent also contained very high concentrations of chloride ions, as much as 47,900 ppm. Chlorides are found in practically all natural waters and are not usually considered a hazardous contaminant. However, the amount of chloride discharged at this

site are well above levels which would kill fish and would have contributed to the lethality observed in the bioassays.

Nitrochem Inc., Maitland

Nitrochem Inc. manufactures ammonia, nitric acid, ammonium nitrate and other nitrogen solutions. Nitrochem's wastewater is discharged directly into the St. Lawrence River. The final effluent was consistently acutely lethal to *Daphnia magna* and trout throughout the year of monitoring. Un-ionized ammonia (NH_3) concentrations in the discharge 0400 were above 50 ppm for several of the days when samples were lethal and would have contributed to the acute toxicity. Cyanide concentrations (12 month average 321 ppb) measured in the 0400 discharge may have also contributed to the observed toxicity.

Partek Insulations Ltd., Sarnia

Partek Insulations Ltd. manufactures insulation fibre and discharges its wastewater into the St. Clair River. The effluent samples collected from the C Water Overflow were consistently acutely lethal to *Daphnia* and trout. The cooling water overflow effluent is straight-through non-contact city water and the probable cause of lethality is the chlorine present in the supply.

Union Carbide Canada Ltd., Sarnia

Union Carbide Canada Ltd. manufactures nitrogen gas and discharges its wastewater into the St. Clair River. The effluent samples collected from the Cole Drain were consistently lethal to *Daphnia magna* and only lethal to trout in one test throughout the year of monitoring. For several of the samples, the copper (12 month average 134 ppb) and zinc (12 month average 454 ppb) concentrations exceeded levels known to be acutely lethal and could have contributed to the lethality observed in the bioassays.

Welland Chemicals Ltd., Sarnia

Welland Chemicals Ltd. manufactures anhydrous aluminum chloride, sodium hypochlorite, and packages chlorine gas. The plant's wastewater is discharged through several sewers into the St. Clair River via the Telford Creek. The effluent samples collected from the South Lagoon discharge point were consistently lethal to *Daphnia* and trout throughout the year of monitoring. It is suspected the high levels of aluminum (12 month average 3710 ppb), and cadmium (12 month average 4.2 ppb) discharged in this effluent could have contributed to the acute lethality observed in the bioassays.

The data in the Appendix, presents the summaries of the acute lethality results, grouped by company in alphabetic order. These summary pages are part of the complete database, that includes the Toxicity Test Report submitted by industry for each test sample. The complete database is available from Environment Ontario upon request. The results of Ministry inspection tests are also presented in the individual summaries. The comment fields on individual Toxicity Test Reports were entered by the industry's laboratory performing the tests, and may not to be consistent across samples and may not necessarily represent the views of the Ministry.

Appendix

COMPANY: Albright and Wilson Americas Inc., Port Maitland
(1810001)
SECTOR: Inorganic Chemical
REGION: West Central

SUMMARY

The data for six trout bioassays, conducted on final discharge effluent samples collected between June 1990 and November 1990, were provided by Albright and Wilson Americas Incorporated. Three of the six effluents samples were not acutely lethal to test fish. The other three samples had 96 hour LC50s > 100 % effluent.

Final Discharge

06900738 sampled: 06/13/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR SUBLETHAL IMPAIRMENT OBSERVED

06900915 sampled: 07/11/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: 10% MORTALITY IN 100% TEST CONCENTRATION.

06901159 sampled: 08/15/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR SUBLETHAL IMPAIRMENT OBSERVED

06901418 sampled: 09/12/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: 40% MORTALITY IN 100% TEST CONCENTRATION.

06901632 sampled: 10/09/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR SUBLETHAL IMPAIRMENT OBSERVED

06901896 sampled: 11/14/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: 30% MORTALITY IN THE 100% CONCENTRATION

Intake Water

06900740 sampled: 06/13/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR SUBLETHAL IMPAIRMENT OBSERVED

06900917 sampled: 07/11/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR SUBLETHAL IMPAIRMENT OBSERVED

06901161 sampled: 08/15/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OF SUBLETHAL IMPAIRMENT OBSERVED

Albright and Wilson Americas Inc. (continued)

06901416 sampled: 09/12/90 LC50: 87.3 %
95% fid. limits: 65.0 - 100.0 %
comments: 80% MORTALITY IN 100% TEST CONCENTRATION.

06901630 sampled: 10/09/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR SUBLETHAL IMPAIRMENT OBSERVED

06901898 sampled: 11/14/90 LC50: 80.6 %
95% fid. limits: 65.0 - 100.0 %
comments: 100% MORTALITY IN THE 100% CONCENTRATION

COMPANY: Albright and Wilson Americas Inc., Port Maitland
(1810001)
SECTOR: Inorganic Chemical
REGION: West Central

SUMMARY

Results for six Daphnia magna acute lethality toxicity tests conducted on samples of Final Discharge (0100) were submitted by Albright and Wilson Americas Inc. of Port Maitland. Five of six samples of Final Discharge were not acutely lethal to Daphnia. The November sample was acutely lethal to Daphnia and had a LC50 of 77.9 %.

Final Discharge

06900739 sampled: 06/13/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR IMMOBILITY OBSERVED IN 48 HRS

06900916 sampled: 07/11/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR IMMOBILITY OBSERVED IN 48 HRS

06901160 sampled: 08/15/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR IMMOBILITY OBSERVED IN 48 HRS

06901419 sampled: 09/12/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR IMMOBILITY OBSERVED IN 48 HRS

06901633 sampled: 10/09/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR IMMOBILITY OBSERVED IN 48 HRS

06901897 sampled: 11/14/90 LC50: 77.9 %
95% fid. limits: 72.9 - 83.1 %
comments: 10% MORTALITY IN THE 65% CONCENTRATION

Intake Water

06900741 sampled: 06/13/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR IMMOBILITY OBSERVED IN 48 HRS

06900918 sampled: 07/11/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR IMMOBILITY OBSERVED IN 48 HRS

06901162 sampled: 08/15/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR IMMOBILITY OBSERVED IN 48 HRS

Albright and Wilson Americas Inc. (continued)

06901417 sampled: 09/12/90 LC50: 80.6 %
95% fid. limits: 65.0 - 100.0 %
comments: 100% MORTALITY IN 100% TEST CONCENTRATION.

06901631 sampled: 10/09/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR IMMOBILITY OBSERVED IN 48 HRS

06901899 sampled: 11/14/90 LC50: 57.0 %
95% fid. limits: 50.0 - 65.0 %
comments: 100% MORTALITY IN THE 65% CONCENTRATION

COMPANY: Cabot Canada Ltd., Sarnia
(4260006)
SECTOR: Inorganic Chemical
REGION: Southwest

SUMMARY

The data for six trout bioassays, conducted on control point #100 discharge samples collected between June 1990 and November 1990, were provided by Cabot Canada Ltd. Four of the six samples were not acutely lethal to the test fish. The other two samples had 96 hour LC50s > 100 % effluent.

Discharge

05900133 sampled: 06/13/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

05900154 sampled: 07/11/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

05900170 sampled: 08/08/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

01900181 sampled: 08/22/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit; Non-lethal

05900194 sampled: 09/12/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

05900204 sampled: 10/10/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments:

05900213 sampled: 11/14/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments:

COMPANY: Cabot Canada Ltd., Sarnia
(4260006)
SECTOR: Inorganic Chemical
REGION: Southwest

SUMMARY

Results for six *Daphnia magna* acute lethality toxicity tests conducted on samples of Discharge Effluent (0100) were submitted by Cabot Canada Ltd. of Sarnia. One of the six samples was acutely lethal to *Daphnia* and had a LC50 of 79.0 %. Three of the remaining samples were non-lethal and the other two had LC50s of > 100 % effluent. A sample collected and tested by the Ministry in August was acutely lethal with a LC50 of 56.6 %.

Discharge

05900133	sampled: 06/13/90	non-lethal
	95% fid. limits: 0.0 -	0.0 %
	comments:	
05900154	sampled: 07/11/90	non-lethal
	95% fid. limits: 0.0 -	0.0 %
	comments:	
05900170	sampled: 08/08/90	LC50: >100 %
	95% fid. limits: 0.0 -	0.0 %
	comments:	
02900182	sampled: 08/21/90	LC50: 56.6 %
	95% fid. limits: 44.1 -	69.4 % slope: 6.9
	comments: MISA Audit	
05900194	sampled: 09/12/90	non-lethal
	95% fid. limits: 0.0 -	0.0 %
	comments:	
05900204	sampled: 10/10/90	LC50: >100 %
	95% fid. limits: 0.0 -	0.0 %
	comments:	
05900213	sampled: 11/14/90	LC50: 79.0 %
	95% fid. limits: 0.0 -	0.0 %
	comments:	

COMPANY: Cyanamid Canada Inc. (Niagara plant), Niagara Falls
(1550003)
SECTOR: Inorganic Chemical
REGION: West Central

SUMMARY

The data for 18 trout bioassays, conducted on samples of Hydro Canal effluent, cooling pond overflow, and south fork sewer effluent collected between June 1990 and November 1990, were provided by Cyanamid Canada Incorporated. All the samples collected from the Hydro Canal were non-lethal. Five of the six samples from the South Fork Sewer were non-lethal and the remaining had a LC50 of > 100 %. Five of six Cooling Pond Overflow samples were non-lethal. The July sample was acutely lethal to fish with a LC50 of 78.6 %.

Whitty Creek Final Effl

Effluent to Hydro Canal

03900499 sampled: 06/19/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900602 sampled: 07/17/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

03900715 sampled: 08/21/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900830 sampled: 09/19/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900908 sampled: 10/16/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non Lethal; single concentration test

03901028 sampled: 11/27/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

cooling pond overflow

03900501 sampled: 06/19/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

Cyanamid Canada Inc. (Niagara plant) (continued)

03900600 sampled: 07/17/90 LC50: 78.6 %
95% fid. limits: 57.2 - 108.0 % slope: 3.6
comments:

03900716 sampled: 08/21/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

03900829 sampled: 09/19/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

03900909 sampled: 10/16/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non Lethal

03901029 sampled: 11/27/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

south fork sewer

03900500 sampled: 06/19/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

03900601 sampled: 07/17/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

03900714 sampled: 08/21/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: Single Conc. Test; 5% mort. @100% effl. conc.

03900828 sampled: 09/19/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration test; non-lethal

03900910 sampled: 10/16/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non Lethal; single concentration test

03901030 sampled: 11/27/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

COMPANY: Cyanamid Canada Inc. (Niagara plant), Niagara Falls
(1550003)
SECTOR: Inorganic Chemical
REGION: West Central

SUMMARY

Results from eighteen *Daphnia magna* acute lethality toxicity tests conducted on samples from three separate outfalls were submitted by Cyanamid Canada Inc. (Niagara Plant) of Niagara Falls. Five of six samples from Effluent to Hydro Canal were not acutely lethal to *Daphnia*, and the remaining sample had 48 h LC50 > 100%. Five of the six cooling pond overflow samples were not acutely lethal to *Daphnia* and the remaining sample had a LC50 of > 100 %. Four of the six South fork sewer samples were not acutely lethal to *Daphnia* and the remaining samples had a LC50 of > 100 % effluent.

Whitty Creek Final Effl

Effluent to Hydro Canal

03900499	sampled: 06/19/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:	Non-lethal	
03900602	sampled: 07/17/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:	Non lethal	
03900715	sampled: 08/21/90	LC50: >100 %
95% fid. limits:	0.0 -	0.0 %
comments:	LC50 >100	
03900830	sampled: 09/19/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:	Non-lethal	
03900908	sampled: 10/16/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:	Non-lethal	
03901028	sampled: 11/27/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:	Non-lethal	

Cyanamid Canada Inc. (Niagara plant) (continued)

cooling pond overflow

03900501	sampled: 06/19/90	LC50: >100 %
	95% fid. limits: 0.0 -	0.0 %
	comments: LC50 >100	
03900600	sampled: 07/17/90	non-lethal
	95% fid. limits: 0.0 -	0.0 %
	comments: Non-lethal	
03900716	sampled: 08/21/90	non-lethal
	95% fid. limits: 0.0 -	0.0 %
	comments: Non-lethal	
03900829	sampled: 09/19/90	non-lethal
	95% fid. limits: 0.0 -	0.0 %
	comments: Non-lethal	
03900909	sampled: 10/16/90	non-lethal
	95% fid. limits: 0.0 -	0.0 %
	comments: Non-lethal	
03901029	sampled: 11/27/90	non-lethal
	95% fid. limits: 0.0 -	0.0 %
	comments: Non-lethal	

south fork sewer

03900500	sampled: 06/19/90	non-lethal
	95% fid. limits: 0.0 -	0.0 %
	comments: Non-lethal	
03900601	sampled: 07/17/90	LC50: >100 %
	95% fid. limits: 0.0 -	0.0 %
	comments: LC50 >100	
03900714	sampled: 08/21/90	LC50: >100 %
	95% fid. limits: 0.0 -	0.0 %
	comments: LC50 >100	
03900828	sampled: 09/19/90	non-lethal
	95% fid. limits: 0.0 -	0.0 %
	comments: Non-lethal	
03900910	sampled: 10/16/90	non-lethal
	95% fid. limits: 0.0 -	0.0 %
	comments: Non-lethal	
03901030	sampled: 11/27/90	non-lethal
	95% fid. limits: 0.0 -	0.0 %
	comments: Non-lethal	

COMPANY: Cyanamid Canada Inc.(Welland plant), Niagara Falls
(1550102)
SECTOR: Inorganic Chemical
REGION: West Central

SUMMARY

The data for ten trout bioassays, conducted on Miller's Creek effluent and Dicy cooling water effluent samples collected between June 1990 and November 1990, were provided by Cyanamid Canada Incorporated. Five of six Miller's Creek samples were non-lethal to test fish. The other sample was lethal with a LC50 of 90.6 %. Also a sample collected and tested by the Ministry in September was acutely lethal and had a 96 hour LC50 of 70.8 %. All three Dicy cooling water samples were non-lethal.

Millers Cr

06900771 sampled: 06/18/90 LC50: 90.6 %
95% fid. limits: 0.0 - 0.0 %
comments: CONFIDENCE LIMITS CAN NOT BE CALCULATED.

06900945 sampled: 07/16/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR SUBLETHAL IMPAIRMENT OBSERVED

06901231 sampled: 08/20/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR SUBLETHAL IMPAIRMENT OBSERVED

01900194 sampled: 09/10/90 LC50: 70.8 %
95% fid. limits: 61.7 - 81.2 %
comments: MISA Audit

06901443 sampled: 09/17/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR SUBLETHAL IMPAIRMENT OBSERVED

06901665 sampled: 10/15/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR SUBLETHAL IMPAIRMENT OBSERVED

06901921 sampled: 11/19/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR SUBLETHAL IMPAIRMENT OBSERVED

Cyanamid Canada Inc. (Welland plant) (continued)

cooling water

process effluent

Dicy Cooling Water

06900947 sampled: 07/16/90 non-lethal

95% fid. limits: 0.0 - 0.0 %

comments: NO MORTALITY OR SUBLETHAL IMPAIRMENT OBSERVED

06901667 sampled: 10/15/90 non-lethal

95% fid. limits: 0.0 - 0.0 %

comments: NO MORTALITY OR SUBLETHAL IMPAIRMENT OBSERVED

06901923 sampled: 11/19/90 non-lethal

95% fid. limits: 0.0 - 0.0 %

comments: NO MORTALITY OR SUBLETHAL IMPAIRMENT OBSERVED

COMPANY: Cyanamid Canada Inc. (Welland plant), Niagara Falls
(1550102)
SECTOR: Inorganic Chemical
REGION: West Central

SUMMARY

Results from ten *Daphnia magna* acute lethality toxicity tests conducted on samples from Millers Creek (0100), and Dicy Cooling Water (01300) were submitted by Cyanamid Canada Inc. (Welland Plant) of Niagara Falls. Seven of eight samples from Millers Creek were acutely lethal to *Daphnia*, with 48 h LC50 values ranging from 24.5% to 90.6 %. The two samples of Dicy Cooling Water were not acutely lethal to *Daphnia*.

Millers Cr

06900771 sampled: 06/18/90 LC50: 90.6 %
95% fid. limits: 0.0 - 0.0 %
comments: CONFIDENCE LIMITS CAN NOT BE CALCULATED

06900772 sampled: 06/18/90 LC50: 24.5 %
95% fid. limits: 20.0 - 30.0 %
comments: 100% MORTALITY IN THE 30% CONCENTRATION

06900944 sampled: 07/16/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR IMMOBILITY OBSERVED IN 48 HRS

06901232 sampled: 08/20/90 LC50: 79.1 %
95% fid. limits: 66.6 - 103.1 % slope: 7.5
comments: 80% MORTALITY IN 100% TEST CONCENTRATION.

02900194 sampled: 09/10/90 LC50: 5.0 - 15.0 %
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit

06901444 sampled: 09/17/90 LC50: 77.9 %
95% fid. limits: 72.9 - 83.2 %
comments: 100% MORTALITY IN 100% TEST CONCENTRATION.

06901666 sampled: 10/15/90 LC50: 72.7 %
95% fid. limits: 65.7 - 80.3 %
comments: 30% MORTALITY IN 65% TEST CONCENTRATION.

06901922 sampled: 11/19/90 LC50: 77.9 %
95% fid. limits: 72.9 - 83.1 %
comments: 10% MORTALITY IN THE 65% CONCENTRATION

Cyanamid Canada Inc. (Welland plant) (continued)

cooling water

process effluent

Dicy Cooling Water

06900948 sampled: 07/16/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR IMMOBILITY OBSERVED IN 48 HRS

06901924 sampled: 11/19/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR IMMOBILITY OBSERVED

COMPANY: Exolon-Esk Company of Canada Ltd., Thorold
(1640002)
SECTOR: Inorganic Chemical
REGION: West Central

SUMMARY

The data for six trout bioassays, conducted on Beaver Dam Rd. Outfall effluent samples collected between June 1990 and November 1990, were provided by Exolon-Esk Company of Canada Limited. All six samples were not acutely lethal to test fish. A sample collected and tested by the Ministry in July had a 96 hour LC50 of > 100 %.

Outfall Beaver-Dam Rd

03900470 sampled: 06/11/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal; single concentration test

01900139 sampled: 07/09/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit

03900584 sampled: 07/10/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900688 sampled: 08/14/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900805 sampled: 09/10/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900890 sampled: 10/08/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900986 sampled: 11/12/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single conc. test; non lethal

COMPANY: Exolon-Esk Company of Canada Ltd., Thorold
(1640002)
SECTOR: Inorganic Chemical
REGION: West Central

SUMMARY

Results for six Daphnia magna acute lethality toxicity tests conducted on samples of Outfall at Beaver Dam Road (0100) were submitted by Exolon-Esk Company of Canada Ltd. of Thorold. All six samples were non-lethal to Daphnia. A sample collected and tested by the Ministry in July had a LC50 of > 100 % effluent.

Outfall Beaver-Dam Rd

03900470	sampled: 06/11/90	non-lethal
	95% fid. limits: 0.0 -	0.0 %
	comments: Non lethal	
02900139	sampled: 07/09/90	LC50: >100 %
	95% fid. limits: 0.0 -	0.0 %
	comments: MISA Audit	
03900584	sampled: 07/10/90	non-lethal
	95% fid. limits: 0.0 -	0.0 %
	comments: Non-lethal	
03900688	sampled: 08/14/90	non-lethal
	95% fid. limits: 0.0 -	0.0 %
	comments: Non-lethal	
03900805	sampled: 09/10/90	non-lethal
	95% fid. limits: 0.0 -	0.0 %
	comments: Non-lethal	
03900890	sampled: 10/08/90	non-lethal
	95% fid. limits: 0.0 -	0.0 %
	comments: Non-lethal	
03900986	sampled: 11/12/90	non-lethal
	95% fid. limits: 0.0 -	0.0 %
	comments: Non-lethal	

COMPANY: Explosive Technologies Int. Ltd., North Bay
(80200)
SECTOR: Inorganic Chemical
REGION: Northeast

SUMMARY

The data for two trout bioassays, conducted on Weir Discharge effluent samples collected between June 1990 and November 1990, were provided by Explosive Technologies International Limited. Both samples were determined not acutely lethal to test fish. A sample collected and tested by the Ministry in November was non-lethal.

Discharge at Weir

03900455 sampled: 06/06/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

03900824 sampled: 09/18/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

01900261 sampled: 11/13/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit

COMPANY: Explosive Technologies Int. Ltd., North Bay
(80200)
SECTOR: Inorganic Chemical
REGION: Northeast

SUMMARY

Results from two Daphnia magna acute lethality toxicity tests conducted on samples from Discharge at Weir (0100) were submitted by Explosive Technologies International Ltd. of North Bay. Both samples were not acutely lethal to Daphnia. A sample collected and tested by the Ministry in November was also non-lethal.

Discharge at Weir

03900455 sampled: 06/06/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

03900824 sampled: 09/18/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

02900261 sampled: 11/13/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit; Non-lethal

COMPANY: Fiberglas Canada Inc., Sarnia
(270306)
SECTOR: Inorganic Chemical
REGION: Southwest

SUMMARY

The data for six trout bioassays, conducted on main effluent samples collected between June 1990 and November 1990, were provided by Fiberglas Canada Incorporated. Five of the six samples were not acutely lethal. The remaining sample produced a 96 hour LC50 of > 100 % effluent.

Main Effluent

03900466 sampled: 06/11/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal; single concentration test

03900578 sampled: 07/09/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single concentration test; Non lethal

03900673 sampled: 08/13/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal; single concentration test

03900793 sampled: 09/10/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900891 sampled: 10/08/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: Single Conc. Test; 90% mort. @ 100% eff.con

03900980 sampled: 11/12/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

COMPANY: Fiberglas Canada Inc., Sarnia
(270306)
SECTOR: Inorganic Chemical
REGION: Southwest

SUMMARY

Results for five Daphnia magna acute lethality toxicity tests conducted on samples of Main Effluent (0100) were submitted by Fibreglas Canada Inc. of Sarnia. Four of five samples were not acutely lethal to Daphnia. The October sample was acutely lethal to Daphnia, with an LC50 of 18.0 %.

Main Effluent

03900466 sampled: 06/11/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

03900673 sampled: 08/13/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

03900793 sampled: 09/10/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

03900891 sampled: 10/08/90 LC50: 18.0 %
95% fid. limits: 13.0 - 25.0 %
comments:

03900980 sampled: 11/12/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

COMPANY: General Chemical Canada Ltd., Amherstburg
(10009)
SECTOR: Inorganic Chemical
REGION: Southwest

SUMMARY

The data for eleven trout bioassays, conducted on North Drain effluent and Main Drain effluent samples collected between June 1990 and November 1990, were provided by General Chemicals Canada Limited. All six samples of North Drain effluent were acutely lethal to the test fish. For these samples, the 96 Hour LC50s ranged from 22.6 % to 28.3 % effluent. Also a sample collected and tested by the Ministry in October was acutely lethal and had an LC50 of 14.1 %. Three of five Main Drain effluent samples were not acutely lethal to the test fish. The remaining two samples had LC50s of > 100 % effluent. A Main Drain effluent sample, collected and tested by the Ministry in October, was non-lethal.

North Drain

03900479	sampled: 06/12/90	LC50:	28.3 %
	95% fid. limits: 20.0 - 40.0 %		
	comments: Lethal		
03900587	sampled: 07/10/90	LC50:	22.6 %
	95% fid. limits: 17.4 - 29.3 % slope: 5.5		
	comments:		
03900690	sampled: 08/14/90	LC50:	25.3 %
	95% fid. limits: 18.8 - 33.9 % slope: 5.5		
	comments:		
03900804	sampled: 09/11/90	LC50:	28.3 %
	95% fid. limits: 20.0 - 40.0 %		
	comments:		
03900896	sampled: 10/09/90	LC50:	28.3 %
	95% fid. limits: 20.0 - 40.0 %		
	comments:		
01900226	sampled: 10/10/90	LC50:	14.1 %
	95% fid. limits: 10.0 - 20.0 %		
	comments: MISA Audit		
03900988	sampled: 11/13/90	LC50:	25.3 %
	95% fid. limits: 18.8 - 33.9 % slope: 5.5		
	comments:		

General Chemical Canada Ltd. (continued)

Main Drain

03900480 sampled: 06/12/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: Single conc. test - 5% mort. @ 100% eff. conc

03900585 sampled: 07/10/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900691 sampled: 08/14/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; 5% mort @100% effl

03900803 sampled: 09/11/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

01900225 sampled: 10/10/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit; Non-lethal

03900989 sampled: 11/13/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

Intake Water

03900481 sampled: 06/12/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single concentration test; Non lethal

03900586 sampled: 07/10/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900689 sampled: 08/14/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900802 sampled: 09/11/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900990 sampled: 11/13/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

COMPANY: General Chemical Canada Ltd., Amherstburg
(10009)
SECTOR: Inorganic Chemical
REGION: Southwest

SUMMARY

Results for twelve *Daphnia magna* acute lethality toxicity tests conducted on samples from North Drain and Main Drain effluent were submitted by General Chemical Canada Ltd. of Amherstburg. All six samples from the North Drain (0100) were acutely lethal to *Daphnia*, with LC50s between 7.9 % and 8.8 %. Four of six samples from the Main Drain (0200) were not acutely lethal to *Daphnia* and the remaining two samples had LC50s > 100%. A sample collected by the Ministry from the Main Drain effluent in October was acutely lethal to *Daphnia* and had a LC50 of 18.8 %. A sample collected by the Ministry from the North Drain effluent in October was acutely lethal and had a LC50 of 5.0 - 15.0 %.

North Drain

03900479	sampled: 06/12/90	LC50:	8.8 %
	95% fid. limits:	6.0 - 13.0 %	
	comments:		
03900587	sampled: 07/10/90	LC50:	7.9 %
	95% fid. limits:	5.9 - 10.4 % slope:	5.5
	comments:		
03900690	sampled: 08/14/90	LC50:	8.5 %
	95% fid. limits:	6.9 - 10.3 % slope:	9.3
	comments:		
03900804	sampled: 09/11/90	LC50:	7.9 %
	95% fid. limits:	5.9 - 10.4 % slope:	5.5
	comments:		
03900896	sampled: 10/09/90	LC50:	8.8 %
	95% fid. limits:	6.0 - 13.0 %	
	comments:		
02900226	sampled: 10/10/90	LC50:	5.0 - 15.0 %
	95% fid. limits:	0.0 - 0.0 %	
	comments:	MISA Audit\High conductivity & pH	
03900988	sampled: 11/13/90	LC50:	8.8 %
	95% fid. limits:	6.0 - 13.0 %	
	comments:		

General Chemical Canada Ltd. (continued)

Main Drain

03900480 sampled: 06/12/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

03900585 sampled: 07/10/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

03900691 sampled: 08/14/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

03900803 sampled: 09/11/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: LC50 >100

03900897 sampled: 10/09/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non Lethal

02900225 sampled: 10/10/90 LC50: 18.8 %
95% fid. limits: 13.9 - 26.3 %
comments: MISA Audit

03900989 sampled: 11/13/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: LC50 >100

Intake Water

03900481 sampled: 06/12/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

03900586 sampled: 07/10/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

03900689 sampled: 08/14/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: LC50 >100

03900802 sampled: 09/11/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

03900898 sampled: 10/09/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non Lethal

General Chemical Canada Ltd. (continued)

03900990 sampled: 11/13/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: LC50 >100

COMPANY: ICI Canada Inc., Cornwall
(390401)
SECTOR: Inorganic Chemical
REGION: Southeast

SUMMARY

The data for four trout bioassays, conducted on LEL-2 effluent samples collected between June 1990 and November 1990, were provided by ICI Canada Inc. One of the four samples (collected in July) was acutely lethal to test fish and had a 96 hour LC50 of 84.5 %. The remaining three samples were non-lethal. A sample collected and tested by the Ministry in September had a LC50 of > 100 % effluent.

Effluent in LEL-2

06900673 sampled: 06/05/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR SUBLETHAL IMPAIRMENT OBSERVED

06900929 sampled: 07/10/90 LC50: 84.5 %
95% fid. limits: 72.6 - 100.7 % slope: 11.7
comments: 80% MORTALITY IN FULL STRENGTH EFFLUENT

06901107 sampled: 08/07/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR SUBLETHAL IMPAIRMENT OBSERVED

06901314 sampled: 09/04/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR SUBLETHAL IMPAIRMENT OBSERVED

01900195 sampled: 09/10/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit

effluent in manhole 15

COMPANY: ICI Canada Inc., Cornwall
(390401)
SECTOR: Inorganic Chemical
REGION: Southeast

SUMMARY

Results from six *Daphnia magna* acute lethality toxicity tests conducted on samples from Effluent in LEL-2 were submitted by ICI Canada Inc. Five of six samples were not acutely lethal to *Daphnia magna*. The remaining sample was acutely lethal to *Daphnia* and the LC50 was 39.0 %. A sample collected and tested by the Ministry in September was non-lethal.

Effluent in LEL-2

06900674 sampled: 06/05/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR IMMOBILITY OBSERVED

06900930 sampled: 07/10/90 LC50: 39.0 %
95% fid. limits: 30.4 - 48.6 % slope: 4.7
comments: 70% MORTALITY IN 50% TEST CONCENTRATION.

06901108 sampled: 08/07/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR IMMOBILITY OBSERVED IN 48 HRS

06901315 sampled: 09/04/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR IMMOBILITY OBSERVED IN 48 HRS

02900195 sampled: 09/10/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit; Non-lethal

06901509 sampled: 10/01/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR IMMOBILITY OBSERVED IN 48 HRS

06901844 sampled: 11/06/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR IMMOBILITY OBSERVED

COMPANY: ICI Canada Inc., Courtright
(390203)
SECTOR: Inorganic Chemical
REGION: Southwest

SUMMARY

The data for six trout bioassays, conducted on plant final effluent samples collected between June 1990 and November 1990, were provided by ICI Canada Inc. All six samples were not acutely lethal to test fish. A sample collected and tested by the Ministry in August was also non-lethal.

Plant Final

05900141 sampled: 06/20/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

05900159 sampled: 07/18/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

01900169 sampled: 08/08/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit; Non-lethal

05900172 sampled: 08/15/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

05900200 sampled: 09/19/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

05900207 sampled: 10/17/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

05900215 sampled: 11/21/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

COMPANY: ICI Canada Inc., Courtright
(390203)
(formerly CIL Inc.)
SECTOR: Inorganic Chemical
REGION: Southwest

SUMMARY

Results for six *Daphnia magna* acute lethality toxicity tests conducted on samples of Plant Final Effluent (0200) were submitted by ICI Canada Inc. All six samples were not acutely lethal to *Daphnia*. A sample collected and tested by the Ministry in August had a 48 h LC50 > 100%.

Plant Final

05900141	sampled: 06/20/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
05900159	sampled: 07/18/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
02900169	sampled: 08/08/90	LC50: >100 %
95% fid. limits:	0.0 -	0.0 %
comments:	MISA Audit	
05900172	sampled: 08/15/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
05900200	sampled: 09/19/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
05900207	sampled: 10/17/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
05900215	sampled: 11/21/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		

COMPANY: International Minerals & Chemicals, Port Maitland
(1500008)
SECTOR: Inorganic Chemical
REGION: West Central

SUMMARY

The data for six trout bioassays, conducted on final effluent samples collected between June 1990 and November 1990, were provided by International Minerals and Chemicals. All six samples were non-lethal to test fish.

Final Effluent

03900468 sampled: 06/11/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal; single concentraion test

03900603 sampled: 07/16/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal;single concentration test

03900653 sampled: 08/07/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900806 sampled: 09/10/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal; single concentration test

03900907 sampled: 10/15/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal; single concentration test

03900987 sampled: 11/12/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

COMPANY: International Minerals & Chemicals, Port Maitland
(1500008)
SECTOR: Inorganic Chemical
REGION: West Central

SUMMARY

Results for six *Daphnia magna* acute lethality toxicity tests conducted on samples of Final Effluent (0300) were submitted by International Minerals and Chemicals of Port Maitland. Four of six samples were not acutely lethal to *Daphnia*, and one sample had 48 h LC50 > 100%. The sample collected in June was acutely lethal to *Daphnia* and the LC50 range was 50 - 100 %.

Final Effluent

03900468	sampled: 06/11/90	LC50:	50.0 - 100.0 %
	95% fid. limits: 0.0 -	0.0 %	
	comments:		
03900603	sampled: 07/16/90	LC50:	>100 %
	95% fid. limits: 0.0 -	0.0 %	
	comments: LC50 >100		
03900653	sampled: 08/07/90	non-lethal	
	95% fid. limits: 0.0 -	0.0 %	
	comments: Non-lethal		
03900806	sampled: 09/10/90	non-lethal	
	95% fid. limits: 0.0 -	0.0 %	
	comments: Non-lethal		
03900907	sampled: 10/15/90	non-lethal	
	95% fid. limits: 0.0 -	0.0 %	
	comments: Non Lethal		
03900987	sampled: 11/12/90	non-lethal	
	95% fid. limits: 0.0 -	0.0 %	
	comments: Non-lethal		

COMPANY: Liquid Carbonic Inc., Courtright
(36250306)
SECTOR: Inorganic Chemical
REGION: Southwest

SUMMARY

The data for seven trout bioassays, conducted on South ditch effluent samples collected between June 1990 and January 1991, were provided by Liquid Carbonic Incorporated. One of the seven samples, collected in June, was acutely lethal to test fish and had a LC50 of 13.0 %. A sample collected in January 1991 had a LC50 of > 100 % effluent. The remaining five samples were non-lethal. A sample collected and tested by the Ministry in September had a LC50 of > 100 %.

Effluent to South Ditch

08900703	sampled: 06/20/90	LC50:	13.0 %
	95% fid. limits:	0.0 - 0.0 %	
	comments:		
08900831	sampled: 07/18/90	non-lethal	
	95% fid. limits:	0.0 - 0.0 %	
	comments:		
08901011	sampled: 08/22/90	non-lethal	
	95% fid. limits:	0.0 - 0.0 %	
	comments:		
01900196	sampled: 09/12/90	LC50: >100 %	
	95% fid. limits:	0.0 - 0.0 %	
	comments:	MISA audit sample.	
08901151	sampled: 09/19/90	non-lethal	
	95% fid. limits:	0.0 - 0.0 %	
	comments:		
08901641	sampled: 11/21/90	non-lethal	
	95% fid. limits:	0.0 - 0.0 %	
	comments:		
08901863	sampled: 12/11/90	non-lethal	
	95% fid. limits:	0.0 - 0.0 %	
	comments:		
08910191	sampled: 01/23/91	LC50: >100 %	
	95% fid. limits:	0.0 - 0.0 %	
	comments:		

COMPANY: Liquid Carbonic Inc., Courtright
(36250306)
SECTOR: Inorganic Chemical
REGION: Southwest

SUMMARY

Results for eight Daphnia magna acute lethality toxicity tests conducted on samples of Effluent to South Ditch (0100) were submitted by Liquid Carbonic Inc. of Courtright. Four of the eight samples were not acutely lethal to Daphnia and three samples have LC50s of > 100 % effluent. The sample collected in June was acutely lethal to Daphnia and the LC50 was 16.8 %. A sample collected and tested by the Ministry in September was non-lethal.

Effluent to South Ditch

08900704 sampled: 06/20/90 LC50: 16.8 %
95% fid. limits: 15.6 - 17.9 %
comments:

08900832 sampled: 07/18/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

08901012 sampled: 08/22/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

02900196 sampled: 09/12/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit; Non-lethal

08901152 sampled: 09/19/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments:

08901392 sampled: 10/24/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments:

08901642 sampled: 11/21/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments:

08901864 sampled: 12/11/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

Liquid Carbonic Inc. (continued)

08910192 sampled: 01/23/91 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

COMPANY: Liquid Carbonic Inc., Maitland
(36250108)
SECTOR: Inorganic Chemical
REGION: Southeast

SUMMARY

The data for seven trout bioassays, conducted on Main Outfall effluent samples collected between June 1990 and January 1991, were provided by Liquid Carbonic Incorporated. Six of the seven samples were not acutely lethal to test fish. The remaining sample, collected in January 1991, had a LC50 of > 100 % effluent. A sample collected and tested by the Ministry in October had a LC50 of > 100 % effluent.

Effluent to Main Outfall

08900701	sampled: 06/20/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
08900833	sampled: 07/17/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
08901001	sampled: 08/21/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:	\$	
08901251	sampled: 09/26/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
05900211	sampled: 10/10/90	LC50: >100 %
95% fid. limits:	0.0 -	0.0 %
comments:	MISA audit sample.	
08901393	sampled: 10/24/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
08901861	sampled: 12/12/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
08910151	sampled: 01/16/91	LC50: >100 %
95% fid. limits:	0.0 -	0.0 %
comments:		

COMPANY: Liquid Carbonic Inc., Maitland
(36250108)
SECTOR: Inorganic Chemical
REGION: Southeast

SUMMARY

Results for seven Daphnia magna acute lethality toxicity tests conducted on samples of Effluent to Main Outfall (0100) were submitted by Liquid Carbonic Inc. of Maitland. Five of the seven samples were not acutely lethal to Daphnia, and the other two samples have 48 h LC50s of > 100% effluent.

Effluent to Main Outfall

08900702 sampled: 06/20/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

08901002 sampled: 08/21/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments:

08901252 sampled: 09/26/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

05900211 sampled: 10/10/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: MISA audit sample.

08901394 sampled: 10/24/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments:

08901682 sampled: 11/21/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

08901862 sampled: 12/12/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

08910152 sampled: 01/16/91 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

COMPANY: Nitrochem Inc., Maitland
(1710003)
SECTOR: Inorganic Chemical
REGION: Southeast

SUMMARY

The data for six trout bioassays, conducted on final effluent samples collected between June 1990 and November 1990, were provided by Nitrochem Incorporated. All six samples were acutely lethal to the test fish. The 96 hour LC50s ranged from 3.1 % to 14.1 % effluent.

Final Effluent

03900482	sampled: 06/12/90	LC50:	14.1 %
	95% fid. limits: 10.0 - 20.0 %		
	comments: Lethal		
03900589	sampled: 07/10/90	LC50:	7.1 %
	95% fid. limits: 5.0 - 10.0 %		
	comments:		
03900700	sampled: 08/14/90	LC50:	3.1 %
	95% fid. limits: 2.1 - 4.5 % slope:		4.5
	comments:		
03900807	sampled: 09/11/90	LC50:	14.1 %
	95% fid. limits: 10.0 - 20.0 %		
	comments:		
03900895	sampled: 10/09/90	LC50:	3.5 %
	95% fid. limits: 2.5 - 5.0 %		
	comments:		
03900966	sampled: 11/06/90	LC50:	6.3 %
	95% fid. limits: 4.7 - 8.5 % slope:		5.5
	comments:		

COMPANY: Nitrochem Inc., Maitland
(1710003)
SECTOR: Inorganic Chemical
REGION: Southeast

SUMMARY

Results for six *Daphnia magna* acute lethality toxicity tests conducted on samples of Final Effluent (0400) were submitted by Nitrochem Inc. of Maitland. All six samples were acutely lethal to *Daphnia* with 48 h LC50s between 4.7 % and 18.0 %.

Final Effluent

03900482	sampled: 06/12/90	LC50:	10.6 %
	95% fid. limits:	4.8 - 16.2 %	slope: 2.2
	comments:		
03900589	sampled: 07/10/90	LC50:	14.5 %
	95% fid. limits:	10.9 - 19.2 %	slope: 4.5
	comments:		
03900700	sampled: 08/14/90	LC50:	4.7 %
	95% fid. limits:	3.4 - 6.3 %	slope: 4.1
	comments:		
03900807	sampled: 09/11/90	LC50:	5.6 %
	95% fid. limits:	3.6 - 8.5 %	slope: 2.5
	comments:		
03900895	sampled: 10/09/90	LC50:	12.7 %
	95% fid. limits:	10.0 - 16.0 %	slope: 5.6
	comments:		
03900966	sampled: 11/06/90	LC50:	18.0 %
	95% fid. limits:	13.0 - 25.0 %	
	comments:		

COMPANY: Norton Canada Inc., Niagara Falls
(1650001)
SECTOR: Inorganic Chemical
REGION: West Central

SUMMARY

The data for eighteen trout bioassays, conducted on Sewer B, C and D effluent samples collected between June 1990 and November 1990, were provided by Norton Canada Incorporated. Five of the six samples collected from Sewer B were not acutely lethal to the test fish. The remaining sample had a LC50 of > 100 % effluent. A sample collected and tested by the Ministry had a LC50 of > 100 %. Four of the six Sewer C samples were non-lethal. A sample collected in September was acutely lethal to test fish. The 96 hour LC50 was 65 % - 100 % effluent. All six Sewer D samples were non-lethal.

Sewer B

03900476 sampled: 06/13/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single concentration test; Non lethal

03900569 sampled: 07/04/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; 5% mort. @ 100%

01900150 sampled: 07/23/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit

03900657 sampled: 08/08/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900771 sampled: 09/05/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900875 sampled: 10/02/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900944 sampled: 11/05/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

Norton Canada Inc. (continued)

Sewer C

03900477 sampled: 06/13/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

03900570 sampled: 07/04/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; 100% mort. @ 100%

03900658 sampled: 08/08/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

03900772 sampled: 09/05/90 LC50: 65.0 - 100.0 %
95% fid. limits: 0.0 - 0.0 %
comments: LC50 >100

03900876 sampled: 10/02/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

03900945 sampled: 11/05/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

Sewer D

03900478 sampled: 06/13/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single concentration Test; Non lethal

03900571 sampled: 07/04/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; Non lethal

03900659 sampled: 08/08/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900773 sampled: 09/05/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900877 sampled: 10/02/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; Non-lethal

03900946 sampled: 11/05/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration test; non-lethal

COMPANY: Norton Canada Inc., Niagara Falls
(1650001)
SECTOR: Inorganic Chemical
REGION: West Central

SUMMARY

Results for eighteen *Daphnia magna* acute lethality toxicity tests conducted on samples from three separate outfalls were submitted by Norton Canada Inc. of Niagara Falls. Four of the six samples from Sewer B (#200) were not acutely lethal to *Daphnia*, and the other two samples have 48 h LC50s > 100%. A sample collected and tested by the Ministry in July also had a LC50 of > 100 %. Three of the six samples from Sewer C (0300) were non-lethal, and the other three samples have LC50s of > 100%. Four of the six samples from Sewer D (0400) were non-lethal and the other two samples have LC50s of > 100 % effluent.

Sewer B

03900476	sampled: 06/13/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:	Non-lethal	
03900569	sampled: 07/04/90	LC50: >100 %
95% fid. limits:	0.0 -	0.0 %
comments:	LC50 > 100	
02900150	sampled: 07/23/90	LC50: >100 %
95% fid. limits:	0.0 -	0.0 %
comments:	MISA Audit	
03900657	sampled: 08/08/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:	Non-lethal	
03900771	sampled: 09/05/90	LC50: >100 %
95% fid. limits:	0.0 -	0.0 %
comments:	LC50 >100	
03900875	sampled: 10/02/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:	Non-lethal	
03900944	sampled: 11/05/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:	Non-lethal	

Norton Canada Inc. (continued)

Sewer C

03900477 sampled: 06/13/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

03900570 sampled: 07/04/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: LC50 > 100

03900658 sampled: 08/08/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

03900772 sampled: 09/05/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: LC50 >100

03900876 sampled: 10/02/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

03900945 sampled: 11/05/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

Sewer D

03900478 sampled: 06/13/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

03900571 sampled: 07/04/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: LC50 > 100

03900659 sampled: 08/08/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

03900773 sampled: 09/05/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: LC50 >100

03900877 sampled: 10/02/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

03900946 sampled: 11/05/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

COMPANY: Partek Insulations Ltd., Sarnia
(20150009)
SECTOR: Inorganic Chemical
REGION: Southwest

SUMMARY

The data for two trout bioassays, conducted on C Water Overflow samples collected between June 1990 and November 1990, were provided by Partek Insulations Limited. Both samples were acutely lethal to the test fish. The measured 96 hour LC50s were 51.1 % and 44.3 % effluent.

C Water Overflow

05900187 sampled: 08/27/90 LC50: 51.1 %
95% fid. limits: 41.2 - 63.5 % slope: 3.0
comments: Probit Program by J.T.Trevors 1986

05900217 sampled: 11/26/90 LC50: 44.3 %
95% fid. limits: 36.3 - 53.8 %
comments:

COMPANY: Partek Insulations Ltd., Sarnia
(20150009)
SECTOR: Inorganic Chemical
REGION: Southwest

SUMMARY

The data for two Daphnia bioassays conducted on C water Overflow samples were provided by Partek Insulations Ltd. Both samples were acutely lethal to Daphnia. The LC50s were 70.8 % and 19.6 %.

C Water Overflow

05900187 sampled: 08/27/90 LC50: 70.8 %
95% fid. limits: 59.1 - 84.9 % slope: 4.5
comments: Probit Program by J.T.Trevors 1986

05900217 sampled: 11/26/90 LC50: 19.6 %
95% fid. limits: 18.1 - 21.3 %
comments:

COMPANY: Puritan-Bennett Canada Ltd., Maitland
(36910008)
SECTOR: Inorganic Chemical
REGION: Southeast

SUMMARY

The data for two trout bioassays, conducted Effluent to Creek samples collected between June 1990 and December 1990, were provided by Puritan-Bennett Canada Limited. Both samples were acutely lethal to the test fish. The 96 hour LC50s were 59.2 % and 43.2 %.

Effluent to Creek

16900026 sampled: 09/19/90 LC50: 59.2 %
95% fid. limits: 59.1 - 59.1 %
comments:

16900045 sampled: 12/18/90 LC50: 43.3 %
95% fid. limits: 35.4 - 52.7 %
comments:

COMPANY: Puritan-Bennett Canada Ltd., Maitland
(36910008)
SECTOR: Inorganic Chemical
REGION: Southeast

SUMMARY

Effluent to Creek

16900021 sampled: 09/19/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO LC-50 DUE TO >50% SURVIVAL AT 100% CONC.

16900035 sampled: 12/18/90 LC50: 93.5 %
95% fid. limits: 80.8 - 129.2 %
comments: SLOPE = 8.605479

Rain Gauge

Intake Water

COMPANY: Stanchem, Cornwall
(391508)
SECTOR: Inorganic Chemical
REGION: Southeast

SUMMARY

The data for four trout bioassays, conducted on Conpac effluent samples collected between June 1990 and November 1990, were provided by Stanchem. Two of the four samples were non-lethal and the other two samples produced LC50s of > 100 % effluent. A sample collected and tested by the Ministry in August was non-lethal.

Effluent from Conpac

06900675 sampled: 06/05/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: 20% MORTALITY IN THE 100% CONCENTRATION

06900832 sampled: 07/04/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: 10% MORTALITY IN FULL STRENGTH EFFLUENT

01900168 sampled: 08/08/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit; Non-lethal

06901105 sampled: 08/08/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR SUBLETHAL IMPAIRMENT OBSERVED

06901316 sampled: 09/05/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR SUBLETHAL IMPAIRMENT OBSERVED

COMPANY: Stanchem, Cornwall
(391508)
SECTOR: Inorganic Chemical
REGION: Southeast

SUMMARY

Results for six *Daphnia magna* acute lethality toxicity tests conducted on samples of Effluent from Conpac (0100) were submitted by Stanchem of Cornwall. Three of the six samples were non-lethal to *Daphnia* and one sample had a LC50 of > 100 % effluent. Two samples, collected in July and November, were acutely lethal to *Daphnia* and the LC50s were 0.2 % and 24.5 %. A sample collected and tested by the Ministry in August was non-lethal.

Effluent from Conpac

06900676 sampled: 06/05/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR IMMOBILITY OBSERVED DURING TE

06900836 sampled: 07/04/90 LC50: 0.2 %
95% fid. limits: 0.1 - 0.2 % slope: 8.3
comments: CONDUCTIVITY IN 100% CONC. MUST BE MULTIPLIED

06901106 sampled: 08/08/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: 20% MORTALITY IN FULL STRENGTH EFFLUENT

02900168 sampled: 08/08/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit; Many Floaters

06901317 sampled: 09/05/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: CONDUCTIVITY IN 100% TO BE MULTIPLIED BY 10.

06901511 sampled: 10/02/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: NO MORTALITY OR IMMOBILITY OBSERVED IN 48 HRS

06901842 sampled: 11/07/90 LC50: 24.5 %
95% fid. limits: 20.0 - 30.0 %
comments: 100% MORTALITY IN THE 30% CONCENTRATION

COMPANY: Sulco Chemicals Ltd., Elmira
(85750008)
SECTOR: Inorganic Chemical
REGION: West Central

SUMMARY

The data for five trout bioassays, conducted on final effluent samples collected between June 1990 and November 1990, were provided by Sulco Chemicals Limited. All five samples were not acutely lethal to the test fish.

Final Effluent

08900691 sampled: 06/20/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

08900811 sampled: 07/18/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

08900961 sampled: 08/15/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

08901241 sampled: 09/26/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

08901451 sampled: 10/31/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

COMPANY: Sulco Chemicals Ltd., Elmira
(85750008)
SECTOR: Inorganic Chemical
REGION: West Central

SUMMARY

Results for six *Daphnia magna* acute lethality toxicity tests conducted on samples of Final Effluent (0100) were submitted by Sulco Chemicals Ltd. of Elmira. Four of six samples were not acutely lethal to *Daphnia*, and two samples have 48 h LC50s > 100 %.

Final Effluent

08900692	sampled: 06/20/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
08900812	sampled: 07/18/90	LC50: >100 %
95% fid. limits:	0.0 -	0.0 %
comments:		
08900962	sampled: 08/15/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
08901242	sampled: 09/26/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
08901452	sampled: 10/31/90	LC50: >100 %
95% fid. limits:	0.0 -	0.0 %
comments:		
08901672	sampled: 11/21/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		

COMPANY: UCAR Carbon Canada Ltd., Welland
(380204)
(formerly Union Carbide Inc.)
SECTOR: Inorganic Chemical
REGION: West Central

SUMMARY

The data for fourteen trout bioassays, conducted on # 2 weir effluent, Government Dock effluent, and Pump House Return effluent samples collected between June 1990 and November 1990, were provided by UCAR Carbon Canada Ltd. One of two samples from the # 2 weir effluent was not acutely lethal. The other sample produced a LC50 result of > 100 % effluent. All six Government Dock samples were non-lethal. A sample collected and tested by the Ministry in July was also non-lethal. Five of the six samples of Pump House Return effluent was non-lethal, and the remaining sample produced a 96 hour LC50 result of > 100 % effluent. A sample collected from Pump House Return effluent and tested by the Ministry in July was also non-lethal.

#2 Weir Effluent

03900566 sampled: 07/03/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; Non lethal

03900868 sampled: 10/01/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: LC50 >100

Government Dock Effluent

03900434 sampled: 06/04/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-,lethal

03900567 sampled: 07/03/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; Non lethal

01900142 sampled: 07/16/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit; Non-lethal

03900651 sampled: 08/07/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900768 sampled: 09/04/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

UCAR Carbon Canada Ltd. (continued)

03900869 sampled: 10/01/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal; single concentration test

03900954 sampled: 11/05/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

Pump House Return Effl

03900435 sampled: 06/04/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; 5% mort @100%

03900568 sampled: 07/03/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; Non lethal

01900143 sampled: 07/16/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit; Non-lethal

03900652 sampled: 08/07/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900770 sampled: 09/04/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900867 sampled: 10/01/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non Lethal; single concentration test

03900955 sampled: 11/05/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

COMPANY: UCAR Carbon Canada Ltd., Welland
(380204)
(formerly Union Carbide Inc.)
SECTOR: Inorganic Chemical
REGION: West Central

SUMMARY

Results from twelve Daphnia magna acute lethality toxicity tests conducted on samples from three separate outfalls were submitted by UCAR Carbon Canada Limited. One of two samples from the #2 Weir Effluent (0100) was not acutely lethal to Daphnia and the other had LC50 of > 100 % effluent. All five samples of Government Dock Effluent (0200) were non-lethal. All five samples of Pump House Return Effluent (0300) were non-lethal. Samples of Government Dock effluent and Pump House Return effluent were tested by the Ministry and both were non-lethal.

#2 Weir Effluent

03900566 sampled: 07/03/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: 21% mortality @ 100% effluent concentration

03900868 sampled: 10/01/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

Government Dock Effluent

03900434 sampled: 06/04/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

03900567 sampled: 07/03/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

02900142 sampled: 07/16/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit

03900651 sampled: 08/07/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

03900768 sampled: 09/04/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

UCAR Carbon Canada Ltd. (continued)

03900869 sampled: 10/01/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

Pump House Return Effl

03900435 sampled: 06/04/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

03900568 sampled: 07/03/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

02900143 sampled: 07/16/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit

03900652 sampled: 08/07/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

03900770 sampled: 09/04/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

03900867 sampled: 10/01/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

COMPANY: Union Carbide Canada Ltd., Moore TWP
(381608)
SECTOR: Inorganic Chemical
REGION: Southwest

SUMMARY

The data for eight trout bioassays, conducted on final effluent samples collected between June 1990 and January 1991, were provided by Union Carbide Canada Limited. Seven of the eight samples were non-lethal and the remaining had a LC50 of > 100 % effluent. A sample collected and tested by the Ministry in October was also non-lethal.

Final Effluent

08900713	sampled: 06/26/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
08900881	sampled: 07/31/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
08901021	sampled: 08/28/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
08901191	sampled: 09/25/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
01900228	sampled: 10/10/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:	MISA Audit; Non-lethal	
08901413	sampled: 10/29/90	LC50: >100 %
95% fid. limits:	0.0 -	0.0 %
comments:		
08901703	sampled: 11/26/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
08910011	sampled: 12/31/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
08910221	sampled: 01/29/91	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		

COMPANY: Union Carbide Canada Ltd., Moore TWP
(381608)
SECTOR: Inorganic Chemical
REGION: Southwest

SUMMARY

Results for eight *Daphnia magna* acute lethality toxicity tests conducted on samples of Final Effluent (0100) were submitted by Union Carbide Canada Ltd. of Moore Township. Six of eight samples were not acutely lethal to *Daphnia*. The sample collected in August had a LC50 of > 100 % effluent. The sample collected in January 1991 was acutely lethal and had a LC50 of 70.7 % effluent. A sample collected and tested by the Ministry in October had a LC50 of > 100 % effluent.

Final Effluent

08900714	sampled: 06/26/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
08900882	sampled: 07/31/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
08901022	sampled: 08/28/90	LC50: >100 %
95% fid. limits:	0.0 -	0.0 %
comments:		
08901192	sampled: 09/25/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
02900228	sampled: 10/10/90	LC50: >100 %
95% fid. limits:	0.0 -	0.0 %
comments:	MISA Audit	
08901414	sampled: 10/29/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
08901704	sampled: 11/26/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
08910012	sampled: 12/31/90	non-lethal
95% fid. limits:	0.0 -	0.0 %
comments:		
08910222	sampled: 01/29/91	LC50: 70.7 %
95% fid. limits:	57.2 -	87.3 % slope: 9.2
comments:		

COMPANY: Union Carbide Canada Ltd., Sarnia
(381509)
SECTOR: Inorganic Chemical
REGION: Southwest

SUMMARY

The data for eight trout bioassays, conducted on Cole Drain effluent samples collected between June 1990 and January 1991, were provided by Union Carbide Canada Limited. Four of the eight samples were non-lethal and the other four samples had LC50 results of > 100 % effluent. A sample collected and tested by the Ministry in October was non-lethal.

Effluent to Cole Drain

08900711 sampled: 06/26/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments:

08900883 sampled: 07/31/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

08901031 sampled: 08/28/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

08901193 sampled: 09/25/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments:

01900227 sampled: 10/10/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit; Non-lethal

08901411 sampled: 10/29/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments:

08901701 sampled: 11/26/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments:

08910015 sampled: 12/31/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

08910223 sampled: 01/29/91 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

COMPANY: Union Carbide Canada Ltd., Sarnia
(381509)
SECTOR: Inorganic Chemical
REGION: Southwest

SUMMARY

Results for eight *Daphnia magna* acute lethality toxicity tests conducted on samples of Effluent to Cole Drain (0100) were submitted by Union Carbide Canada Ltd. of Sarnia. Six of the eight samples were acutely lethal to *Daphnia* and the LC50s ranged from 32.7 % to 91.2 %. The remaining two samples have LC50s of > 100 % effluent.

Effluent to Cole Drain

08900712	sampled: 06/26/90	LC50:	32.7 %
	95% fid. limits:	26.0 - 40.9 %	
	comments:		
08900884	sampled: 07/31/90	LC50:	>100 %
	95% fid. limits:	0.0 - 0.0 %	
	comments:		
08901032	sampled: 08/28/90	LC50:	61.4 %
	95% fid. limits:	48.7 - 77.4 %	
	comments:		
08901194	sampled: 09/25/90	LC50:	82.0 %
	95% fid. limits:	46.5 - 394.6 % slope:	1.6
	comments:		
08901412	sampled: 10/29/90	LC50:	>100 %
	95% fid. limits:	0.0 - 0.0 %	
	comments:		
08901702	sampled: 11/26/90	LC50:	91.2 %
	95% fid. limits:	70.1 - 160.5 % slope:	5.4
	comments:		
08910014	sampled: 12/31/90	LC50:	78.6 %
	95% fid. limits:	54.9 - 164.1 % slope:	2.9
	comments:		
08910224	sampled: 01/29/91	LC50:	35.4 %
	95% fid. limits:	35.3 - 35.3 %	
	comments:		

COMPANY: Union Carbide Canada Ltd., Sault Ste. Marie
(381202)
SECTOR: Inorganic Chemical
REGION: Northeast

SUMMARY

The data for six trout bioassays, conducted on samples of effluent discharging to Outfall at SD collected between June 1990 and January 1991, were provided by Union Carbide Canada Limited. Four of the six samples were not acutely lethal and the remaining two samples had LC50 results of > 100 % effluent. A sample collected and tested by the Ministry in July had a LC50 result of > 100 % effluent

Effluent to Outfall at SD

08900721 sampled: 06/26/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: Mortality appeared natural.

01900145 sampled: 07/17/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit

08900911 sampled: 07/31/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

08901041 sampled: 08/27/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

08901441 sampled: 10/29/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments:

08910021 sampled: 01/01/91 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

08910231 sampled: 01/28/91 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

COMPANY: Union Carbide Canada Ltd., Sault Ste. Marie
(381202)
SECTOR: Inorganic Chemical
REGION: Northeast

SUMMARY

Results from six Daphnia magna acute lethality toxicity tests conducted on samples of Effluent to Outfall at SD (0100) were submitted Union Carbide Canada Ltd. of Sault Ste. Marie. The sample collected in October was acutely lethal to Daphnia and had a LC50 of 60.5 %. Of the remaining samples, three were non-lethal and two samples had LC50s of > 100 % effluent. One of the two samples collected and tested by the Ministry was acutely lethal to Daphnia and the LC50 was 63.3 % . The other sample had a LC50 of > 100 % effluent.

Effluent to Outfall at SD

08900722	sampled: 06/26/90	non-lethal
	95% fid. limits: 0.0 - 0.0 %	
	comments:	
02900145	sampled: 07/17/90	LC50: 63.3 %
	95% fid. limits: 53.7 - 74.6 %	
	comments: MISA Audit	
08900912	sampled: 07/31/90	LC50: >100 %
	95% fid. limits: 0.0 - 0.0 %	
	comments:	
08901042	sampled: 08/27/90	LC50: >100 %
	95% fid. limits: 0.0 - 0.0 %	
	comments:	
02900227	sampled: 10/10/90	LC50: >100 %
	95% fid. limits: 0.0 - 0.0 %	
	comments: MISA Audit/Circling reaction in 5% conc.	
08901442	sampled: 10/29/90	LC50: 60.5 %
	95% fid. limits: 49.7 - 73.5 %	
	comments:	
08910022	sampled: 01/01/91	non-lethal
	95% fid. limits: 0.0 - 0.0 %	
	comments:	
08910232	sampled: 01/28/91	non-lethal
	95% fid. limits: 0.0 - 0.0 %	
	comments:	

COMPANY: Washington Mills Electro Minerals, Niagara Falls
(1660000)
SECTOR: Inorganic Chemical
REGION: West Central

SUMMARY

The data for twelve trout bioassays, conducted on Queen Lagoon effluent, and Old Lagoon effluent samples collected between June 1990 and November 1990, were provided by Washington Mills Electro Minerals. All twelve Queen Lagoon effluent and Old Lagoon effluent samples were not acutely lethal. Samples collected and tested by the Ministry from both Queen Lagoon and Old Lagoon effluent were non-lethal.

Queen Lagoon Effluent

03900453 sampled: 06/05/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal; single concentration test

01900134 sampled: 07/03/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit; Non-lethal

03900563 sampled: 07/03/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; Non lethal

03900655 sampled: 08/07/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900765 sampled: 09/05/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal; single concentration test

03900880 sampled: 10/02/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

03900962 sampled: 11/06/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

Old Lagoon Effluent

03900452 sampled: 06/05/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal; single concentration test

Washington Mills Electro Minerals (continued)

03900564 sampled: 07/03/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; Non lethal

01900135 sampled: 07/03/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit; Non-lethal

03900656 sampled: 08/07/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single concentration test; non-lethal

03900766 sampled: 09/05/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal; single concentration test

03900879 sampled: 10/02/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

03900963 sampled: 11/06/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

COMPANY: Washington Mills Electro Minerals, Niagara Falls
(1660000)
SECTOR: Inorganic Chemical
REGION: West Central

SUMMARY

Results for twelve Daphnia magna acute lethality toxicity tests conducted on samples of Queen Lagoon Effluent (#100) and Old Lagoon Effluent (0200) were submitted by Washington Mills Electro Minerals of Niagara Falls. Four of six samples of Queen Lagoon Effluent were not acutely lethal to Daphnia and the remaining two samples have LC50s of > 100%. Five of six samples of Old Lagoon Effluent were non-lethal, and one sample had an LC50 > 100 %. A sample from each discharge was collected and tested by the Ministry in July and both produced LC50 results of > 100 % effluent.

Queen Lagoon Effluent

03900453 sampled: 06/05/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments:

03900563 sampled: 07/03/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

02900134 sampled: 07/03/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit

03900655 sampled: 08/07/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: LC50 >100

03900765 sampled: 09/05/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

03900880 sampled: 10/02/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

03900962 sampled: 11/06/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

Washington Mills Electro Minerals (continued)

Old Lagoon Effluent

03900452 sampled: 06/05/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments:

02900135 sampled: 07/03/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit; Many floaters over all conc.

03900564 sampled: 07/03/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

03900656 sampled: 08/07/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

03900766 sampled: 09/05/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

03900879 sampled: 10/02/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

03900963 sampled: 11/06/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

COMPANY: Washington Mills Ltd., Niagara Falls
(1950005)
SECTOR: Inorganic Chemical
REGION: West Central

SUMMARY

The data for six trout bioassays, conducted on final effluent samples collected between June 1990 and November 1990, were provided by Washington Mills Limited. All six samples were not acutely lethal to the test fish. A sample collected and tested by the Ministry in July was also non-lethal.

Final Effluent

03900454 sampled: 06/06/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

03900565 sampled: 07/03/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; Non lethal

01900138 sampled: 07/09/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit; Non-lethal

03900654 sampled: 08/07/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900767 sampled: 09/05/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal; single concentration test

03900878 sampled: 10/02/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

03900961 sampled: 11/06/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Single Concentration Test; non-lethal

COMPANY: Washington Mills Ltd., Niagara Falls
(1950005)
SECTOR: Inorganic Chemical
REGION: West Central

SUMMARY

Results for six *Daphnia magna* acute lethality toxicity tests conducted on samples of Final Effluent (0100) were submitted by Washington Mills Ltd. of Niagara Falls. Three of six samples were not acutely lethal to *Daphnia* and the other three samples have LC50s > 100 %. A sample collected and tested by the Ministry in July had a LC50 of > 100 % effluent.

Final Effluent

03900454 sampled: 06/06/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

03900565 sampled: 07/03/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non lethal

02900138 sampled: 07/09/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: MISA Audit; Very High Conductivity

03900654 sampled: 08/07/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: LC50 >100

03900767 sampled: 09/05/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: LC50 >100

03900878 sampled: 10/02/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: LC50 >100

03900961 sampled: 11/06/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments: Non-lethal

COMPANY: Welland Chemical Ltd., Sarnia
(18530006)
SECTOR: Inorganic Chemical
REGION: Southwest

SUMMARY

The data for ten trout bioassays, conducted on samples collected from South Lagoon effluent, # 1 Lagoon effluent, Chlorine Fill UN effluent, Alum Chloride E Wall, and Alum Chloride W Wall discharges between December 1989 and May 1990, were provided by Welland Chemical Limited. Three of four South Lagoon effluent samples were acutely lethal to the test fish. The 96 hour LC50s were 62.8 %, 29.2 % and 36.0 % effluent. The remaining sample had a LC50 result of > 100 % effluent. Two of the three # 1 Lagoon effluent samples were non-lethal. The other sample had a LC50 of > 100 % effluent. The Chlorine Fill UN effluent and Alum Chloride W Wall effluent samples were both non-lethal to test fish. The Alum Chloride E Wall effluent sample had a LC50 result of > 100 % effluent.

South Lagoon Effluent

05900142 sampled: 06/20/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments: 100% X 10

05900146 sampled: 07/09/90 LC50: 62.8 %
95% fid. limits: 55.5 - 70.6 % slope: 16.8
comments: 100%, 75% Cconcentration Cond. multiple by 10

05900186 sampled: 08/22/90 LC50: 29.2 %
95% fid. limits: 20.7 - 41.3 %
comments:

05900218 sampled: 11/26/90 LC50: 36.0 %
95% fid. limits: 25.9 - 45.8 %
comments: 100,75,56% X Conductivity by 10

#1 Lagoon Effluent

05900161 sampled: 07/25/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

05900203 sampled: 10/01/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

05900216 sampled: 11/21/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments:

Welland Chemical Ltd. (continued)

Chlorine Fill UN Effluent

05900148 sampled: 07/10/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

Alum Chloride E Wall

05900149 sampled: 07/10/90 LC50: >100 %
95% fid. limits: 0.0 - 0.0 %
comments:

Alum Chloride W Wall

05900150 sampled: 07/10/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

COMPANY: Welland Chemical Ltd., Sarnia
(18530006)
SECTOR: Inorganic Chemical
REGION: Southwest

SUMMARY

Results for ten Daphnia magna acute lethality toxicity tests conducted on samples from five separate discharge points and one intake site were submitted by Welland Chemicals Ltd. of Sarnia. Four samples of South Lagoon Effluent (0100) were acutely lethal to Daphnia and have LC50s between 19.6 % and 61.5 % effluent. The three samples of #1 Lagoon Effluent (0200) were non-lethal. One sample of Chlorine Fill UN Effluent (0300) had a LC50 of 31.3 %. One sample from the Alum Chloride E Wall (0400) had a LC50 of 40.3 %. One sample from the Alum Chloride W Wall (0500) had a LC50 of 70.8 %.

South Lagoon Effluent

05900142 sampled: 06/20/90 LC50: 59.8 %
95% fid. limits: 50.4 - 70.7 %
comments: 100% Multiply by 10

05900146 sampled: 07/09/90 LC50: 46.7 %
95% fid. limits: 36.9 - 59.1 %
comments: 100% Conc. Conductivity Multiple by 10

05900186 sampled: 08/22/90 LC50: 61.5 %
95% fid. limits: 49.8 - 83.9 %
comments:

05900218 sampled: 11/26/90 LC50: 19.6 %
95% fid. limits: 18.1 - 21.3 %
comments: 100% & 50% X Conductivity by 10

#1 Lagoon Effluent

05900161 sampled: 07/25/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

05900203 sampled: 10/01/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

05900216 sampled: 11/21/90 non-lethal
95% fid. limits: 0.0 - 0.0 %
comments:

Welland Chemical Ltd. (continued)

Chlorine Fill UN Effluent

05900148 sampled: 07/10/90 LC50: 31.3 %
95% fid. limits: 28.7 - 34.2 % slope: 6.7
comments: Probit Program by J.T.Trevors (1986)

Alum Chloride E Wall

05900149 sampled: 07/10/90 LC50: 40.3 %
95% fid. limits: 33.9 - 46.1 %
comments:

Alum Chloride W Wall

05900150 sampled: 07/10/90 LC50: 70.8 %
95% fid. limits: 59.1 - 84.8 % slope: 4.5
comments: Probit Program by J.T. Tevors (1986)