

FEB-09-1998 15:13

POLY-DRILL

403 255 7185 P.02



POLY-DRILL DRILLING SYSTEMS LTD.
 WATER HYDRAULICS, CHEMISTRY AND FILTRATION
 SYSTEMS FOR DRILLING
 1824 - 104 Ave., S.W. Calgary, Alberta, T2W 0A8
 TEL: 403-255-5112, FAX: 255-7185

MEMORANDUM:**DATE:** Monday, March 11, 1996**ATTENTION:** Mr. Gordon Cyr
COMPANY: Midwest Drilling**FROM:** Bob Whipple**SUBJECT:** Results from Sampling program-Lac De Gras

Nunavut Water
Board

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Dear Gordon,

An on site water sampling program was conducted on Drill 1186, Diamond Drill Hole 418-11 Tuesday, Feb. 27, 96. The purpose of the program was to complete fish toxicity tests on drill water. The samples were collected from the mixing tank and from the casing for drill water returning to the recirculation system. Bruno Zerba witnessed the sampling and the samples were presented to HydroQual Laboratories, Calgary within 24 hours of the sampling procedure.

DRILL WATER RESULTS:

Sample #1. Poly-Drill Mix Tank- LC-50 18% 47,000 ppm

Sample #2. Return water from casing- LC-50 100%, no fish mortality.

During the time of sampling the drill water, the hole was at 71m. in the contact depth between the granites and the kimberlites. It should be noted that at this point of drilling the drilling fluid mixture is at a concentrated mixture of 1 L. of OBX, 1 L. of 133X and .25 L. of Clay Treat.

The use of actual field samples has more significance than the testing of stock mixed lab samples, as the physical attributes of the system are accounted for, including system pH, on site water quality and the presents of drill cuttings. The physical/chemical aspects of the ion exchange properties of the Poly-Drill formulas are clearly demonstrated by these test results. The concentrations of 133X and OBX are absorbed to the surface of the wellbore to prevent water hydration and maintain hole stability.

Very Best Regards,

Bob Whipple, Pres.

MSDS sheets
for BHP Billiton
Repulse Bay
application.

from: Jeremy
Howe

fx 867360-6369

FEB-09-1998 15:14

POLY-DRILL

403 255 7185 P.03



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 WATER HYDRAULICS, CHEMISTRY AND FILTRATION
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 1824 - 104 Ave., S.W. Calgary, Alberta, T2W 0A8
 TEL: 403-255-5112, FAX: 255-7185

MEMORANDUM:

Monday, February 09, 1998

ATTENTION: GORDON CYR
 COMPANY: MIDWEST DRILLING

FROM: Bob Whipple

SUBJECT: POLY-DRILL SYSTEMS MICROTOX TESTING

Dear Gordon,

Included are results of Microtox test carried out by HydroQual laboratories. The Microtox test is a bioassay that is recognized by the Alberta Energy and Utilities Board and Alberta Forestry as a method of determining the toxicity of drilling sumps and the treatments required for pumping off the fluids in land spreading operations. Fish studies may still be required if fluids are pumped to flowing bodies of water. I have discussed the Microtox test procedure with laboratories in British Columbia and Oceans & Fisheries, NWT, neither of these groups recognize the Microtox tests as a method of determining toxicity of fluids. Fish bioassays are currently the recognized tests for toxicity evaluations by Oceans & Fisheries. A table of currently completed tests is included.

Table of Microtox Test Results:

Test:	Product:	Concentration:	IC 50	Status	Conditions:	Comments:
70723	Poly-Drill 1330 (133X)	2L/1000L	>91	Pass	Field use 2L/1200	Pass concentration greater than field use.
26811	Poly-Drill Clay Treat	1L/100L	>100	pass	Field use .25L/1000	Pass concentration greater than field use.
70724	Poly-Drill OBXG	.5L/1000L	41	Fail	Field use 2L/1200	
	Poly-Drill OBXG	.5L/1000L	>91	Pass		Requires charcoal additions
70726	Poly-Drill OBX	.5L/1000L	39	Fail	Field use 2L/1200	
	Poly-Drill OBX	.5L/1000L	>91	Pass		Requires charcoal additions
70728	Poly-Pit	2L/1000L	0.25	Fail		Failed at concentration of 2L/1000L

Table of Fish Test Results:

60196	OBX/133X/Clay Tr.	Field Conc.	>100	Pass	Sample from field operations
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Summary: Poly-Drill Drilling Systems will continue to evaluate test requirements for core-drilling applications with the groups involved. Microtox tests of Poly-Drill products will continue to be used for Alberta requirements, however fish tests will continue to be the main test procedure for toxicity of products used outside of Alberta.

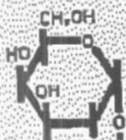
Very Best Regards,

Bob Whipple, Pres.

FEB-06-1998 14:06

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Poly-Drill Drilling Systems

1824 - 104 Avenue, S.W.
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T2W-0A8
(403) 259-5112 FAX (403) 255-7185

MATERIAL SAFETY DATA SHEET / FICHE SIGNALERIQUE

Section 1—PRODUCT IDENTIFICATION

PRODUCT TRADE NAME(S): Poly Drill CLAY TREAT II

SECTION 2—COMPOSITION

SECTION 3—PHYSICAL DATA

Boiling Point: 100 C
Solubility in Water: Soluble
Density (g/ml): 1.1
Appearance and Odor: Red. Characteristic slight odor.

Specific Gravity (@ 25 Deg.C.): 1.09
pH: 5.0 - 7.0 (1.0% solution)
Physical State: Liquid

SECTION 4—FIRE AND EXPLOSION DATA

Flash Point: >93.3 C
Conditions of flammability: Will burn after drying
Hazardous combustion products: Oxides of carbon and nitrogen and products of incomplete combustion.
Upper and Lower flammable limits: Not available
Extinguishing media: Use water spray, foam, dry chemical, or carbon dioxide.

SECTION 5—REACTIVITY

Chemical stability: Stable under normal conditions.
Hazardous Polymerization: Will not occur.
Incompatible substances: Avoid strong oxidizing and reducing agents.
Hazardous decomposition products: Not available.

SECTION 6—HEALTH HAZARD DATA

TOXICITY RATING: Practically non-harmful.

Routes of Exposure and Effects:

SKIN: Slight irritant: prolonged contact may cause skin irritation or dermatitis in some individuals

EYE: No effects of exposure expected with the exception of possible irritation.

INHALATION: If misted, no effects of exposure are expected.

Exposure limits: Contains trace acrylamide (SKIN). Exposure limit, TWA_{EV}=0.03 mg/m(ONT. Reg. 654/86).

Contains traces of isopropanol. Exposure limit, TWA_{EV}=400ppm, STEV=500ppm(ONT. Reg. 654/86).

Carcinogenicity: This product contains traces of acrylamide. Acrylamide is listed by IARC(Group 2B) and ACGIH(Group A2) as a possible human carcinogen.

Teratogenicity: Not available.

Mutagenicity: Not available.

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SECTION 7—EMERGENCY AND FIRST AID PROCEDURES

SKIN: Wash exposed area with soap and water. If irritation or abnormalities persist, call a physician.

EYE: Immediately flush eyes with water for 15 minutes. If irritation or abnormalities persist, call a physician.

INHALATION: Remove to fresh air. If breathing becomes difficult, give oxygen and call a physician.

INGESTION: Do not induce vomiting. Call a physician immediately.

SECTION 8—HANDLING AND USE PRECTIONS

Storage requirements: keep container closed when no in use. Store in a cool dry location away from oxidizing and reducing agents.

Waste Disposal: product should be disposed of in accordance with applicable local, Provincial and Federal regulations.

Steps must be taken if product is released or spilled: clean spill areas thoroughly to avoid hazardous slippery conditions.

SECTION 9—INDUSTRIAL HYGIENE CONTROL MEASURES

Respiratory Protection: None normally required.

Ventilation: If mist and/or vapors are present, use air purifying respirator or self-contained breathing apparatus, but this is rarely required.

Eye Protection: Safety glasses, if personally preferred

Gloves: Generally not necessary. Personal preference.

SECTION 10—TOXICOLOGICAL PROPERTIES

G50 Microtox Analysis prepared by HydroQual Laboratories, Calgary, AB--97/07/23 Test#971127, Sample#97556-2.

Test Description	EC20	EC50	Pass/Fail
MTX	29 (26 - 32)	>91	PASS

SECTION 11—DEPARTMENT OF TRANSPORTATION INFORMATION

Shipping Name: Drilling Mud

Hazard Class: Not hazardous

Hazardous Substances: None

Cautionary Labeling: None required

02/09/98 11:20

CANAMARA CGY

002/007

General Chemical Canada Ltd.

Suite 850, 10655 Southport Rd., S.W.
Calgary, Alberta T2W 4Y1 • (403) 278-9595 • Fax (403) 271-9333



SUBJECT: TOXICITY EVALUATION OF ROAD DUST ABATEMENT CHEMICALS
Author: Ministry of Environment, Province of British Columbia
Environmental Protection Division
Re: Summary of Findings/Report Interpretation

Please find attached the above mentioned report intended to evaluate and inform on the various road dust abatement chemicals commonly or proposed for use within and for the Province of B.C.

As the report is of a technical nature and not easily understood, we are providing a brief summary and interpretation of the terminology and results as follows:

TEST PARAMETERS:

1. 96-hr LC50 rainbow trout: this is the Lethal Concentration (LC) of product, expressed in parts per million (ppm) it takes to produce a 50% mortality rate in the test group over a 96-hour test time. Rainbow trout are considered to be higher in the food chain.
2. 48-hr LC50 daphnia: as above but over a 48-hour test duration. Daphnia is considered to be lower in the food chain than rainbow trout. Daphnia may also be a food source for rainbow trout.
3. Microtox LC50: this study is conducted on the low end of the food chain.

TEST RESULTS:

The bar graphs as illustrated are commonly misinterpreted. In this case, "big is not bad". The **LARGER OR LARGEST BAR GRAPH INDICATES THE LESS OR LEAST TOXIC MATERIAL**. The increments on the right hand side of the graphs express the parts per million of material it takes to produce the desired effect (ie: 50% mortality). By example, it takes 45,000 ppm 35% Calcium Chloride solution to produce the same mortality rate as 9,000 ppm 30% magnesium chloride, or 6,400 ppm calcium lignosulphonate, etc. for the 96-hour LC50 on rainbow trout. As you can see, there are several orders of magnitude of difference between some products. A more thorough interpretation of the test results may be available from the author.

We have provided this submission as an information service only. We do not imply, nor should the language of this submission be construed as, a comparison of product and/or the relative toxicity of products.

General Chemical is an environmentally conscious company. General Chemical is an active member of the Responsible Care Program. Please call us for more information on all our products and services.

