



0030

environmental consultants, inc.

ACT/007/012 # 2

8160 South Highland Drive, Suite A-4 • Sandy, Utah 84093 • (801) 943-4144 • Fax: (801) 942-1852

Copy Bob

FAX TRANSMISSION

Time: 1715 AM/PM

Date: 12/30/97

To: Bob Davidson

Company: DOGM

FAX #: 359-3940

\*\*\*\*\*

From: Tim Thompson

JBR Environmental Consultants, Inc. Re: COVOL 97H

FAX #: 801-942-1852

Total number of pages (including cover page):

Special Instructions or Comments: Attached is the info you requested

- 1.) Diesel Oil Biodegradation
- 2.) Hazardous Waste Status
- 3.) Lab Analysis - pH of Tailings Water (Appendix TW)

This same info will be submitted formally on Fri. 1/2/98.

Thanks again for your prompt review and technical analysis as we are hoping for approval on Friday. Call if questions

*[Signature]*

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(702) 738-8766  
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1 of 3

December 30, 1997

## MEMORANDUM

FROM: BRIAN BUCK  
TO: TIM THOMPSON  
RE: RESPONSE TO DOGM QUESTION ON DIESEL OIL BIODEGRADATION IN  
THE PROPOSED COVOL TAILINGS

Bob Davidson with DOGM asked us to provide some backup for our assertion that the diesel oil content of the proposed COVOL tailings is expected to naturally degrade in the tailings.

Attached is page 169 from Chapter 13, "Biological Treatment of Soils Contaminated by Petroleum Hydrocarbons" from Petroleum Contaminated Soils by Paul Kostcki and Ed Calabrese, 1990. This book is a recognized reference in the field of hydrocarbon remediation. The information on this page indicates that:

- 1) The largest percentage of hydrocarbon compounds contained in No.2 diesel oil are straight chain alkanes (n-Alkanes) between carbon chain lengths  $C_{12}$  and  $C_{26}$ . These compounds are reported to have biodegradation half lives ranging from 7 to 45 days.
- 2) The values of half lives for these compounds in Table 1 on the page were obtained from the technical literature. The half lives indicated are for natural degradation of these compounds in petroleum contaminated soils. The compounds shown in the table are those that are typically present in diesel oil. It can be seen from the table that the half lives for almost all the component compounds of typical diesel oil range from about 6 to about 53 days.

Also attached is page 20 from a guidance document issued on December 23, 1993 by the Utah Department of Environmental Quality, Division of Environmental Response and Remediation. This document is entitled, Transport, Fate and Natural Attenuation of Petroleum Fuels in the Subsurface: Literature Research. Table 1.2.5.3b on the page indicates that n-Alkane hydrocarbon groups with carbon chain lengths between  $C_{10}$  and  $C_{22}$  are highly biodegradable and the least toxic. As mentioned above, these alkanes make up the largest percentage of typical diesel oil.

This information is just a sample of the extensive data base in the literature which generally indicates that diesel oil has high biodegradability, low solubility in water, and low biological toxicity. This is also expected to be the case for the small concentration of diesel oil that will be contained in the COVOL tailings.

attachments.

December 30, 1997

MEMORANDUM

FROM: BRIAN BUCK  
TO: TIM THOMPSON  
RE: RESPONSE TO DOGM QUESTION ON HAZARDOUS WASTE STATUS OF  
PROPOSED COVOL TAILINGS

Bob Davidson with DOGM asked us to research the potential hazardous waste status of the COVOL tailings with regard to benzene content contributed by the diesel oil (No.2 Fuel Oil) used in the flotation process. Based upon calculations conducted by Kieth Ristinen of JBR, it has been estimated that the steady state concentration of diesel in the tailings will be approximately 9 mg/l. The attached Table 1 Volumetric Percentages of Toxic Constituents in Petroleum Products indicates that benzene comprises approximately 0.1% of typical diesel oil (ref.1). This would indicate that the expected benzene concentration of the COVOL tailings would be approximately 0.009 mg/l. The federal regulations on hazardous waste toxicity characteristics (40 CFR 261.24) indicate a toxicity characteristic regulatory level for benzene of 0.5 mg/l, which is much higher than the predicted concentration in the COVOL tailings. Thus, it is extremely unlikely that the COVOL tailings will exhibit the characteristic of TCLP toxicity for benzene.

In addition, 40 CFR 261.4(b)(7) indicates that tailings from the beneficiation of ores and minerals are excluded from regulation as hazardous waste. This regulatory exclusion is commonly referred to as the Bevill exclusion. This exclusion applies to all beneficiation tailings, new and old. The existing coal fines in the tailings pond that will be worked by COVOL are therefore currently excluded from hazardous waste regulation under the Bevill exclusion. The fact that COVOL is intending on reworking these tailings and reprocessing them in the new flotation plant does not change the current Bevill status of these materials. They are currently excluded from hazardous waste regulation and will continue to be excluded. As indicated above, COVOL will not impart any new chemical characteristics to these materials that would necessitate their regulation as a hazardous waste.

Finally, the attached letter from the Utah Division of Solid and Hazardous Waste indicates that they have determined they would not regulate the COVOL operations under the Utah Solid and Hazardous Waste Regulations because of the Bevill exclusion status of the coal fines.

References:

1. State of Utah, Division of Environmental Response and Remediation, Department of Environmental Quality, 12/11/90 Memorandum on Use of the Guideline Document for Estimating Numeric Cleanup Levels for Petroleum-contaminated Soil and Underground Storage Tank Release Sites.

attachments

Table 1

## Volumetric Percentages of Toxic Constituents in Petroleum Products

Constituent	Gasoline, unspecified type	Gasoline, leaded	Gasoline, unleaded	Gasoline, super unleaded	Kerosene (#1 fuel & Jet-A)	Diesel (#2 fuel)	Bunker C (#6 fuel)	Waste Oil*
Benzene	1-2 <sup>1</sup> 0.16-4.66 <sup>2</sup>	3.6 <sup>3</sup> , 5.2 <sup>8</sup>	4.2 <sup>3</sup> , 4.27 <sup>8</sup> , 1.38 <sup>9</sup>	5.87 <sup>8</sup>	0.4 <sup>6</sup>	<0.1 <sup>2</sup> - 0.133 <sup>6</sup>	0.001 <sup>9</sup>	5.5 <sup>3</sup>
Toluene	4.0 <sup>1</sup> 3.64-29.1 <sup>2</sup>	18.1 <sup>3</sup> , 6.0 <sup>8</sup>	6.4 <sup>8</sup> , 5.8 <sup>9</sup>	8.0 <sup>6</sup>	1.87 <sup>6</sup>	<0.1 <sup>2</sup> - 0.933 <sup>6</sup>	0.00604 <sup>9</sup>	5.5 <sup>3</sup>
Ethylbenzene	2.0-5.0 <sup>1</sup> 0.48-3.8 <sup>2</sup>	1.6 <sup>8</sup>	1.87 <sup>8</sup> , 1.25 <sup>9</sup>	2.0 <sup>8</sup>	0.4 <sup>6</sup>	<0.1 <sup>2</sup> - 0.27 <sup>6</sup>	0.00217 <sup>9</sup>	--
Xylenes	15.0-24.0 <sup>1</sup> 4.3-11.08 <sup>2</sup>	7.47 <sup>8</sup>	8.93 <sup>8</sup> , 6.52 <sup>9</sup>	9.87 <sup>8</sup>	1.2 <sup>6</sup>	<0.1 <sup>2</sup> - 0.67 <sup>6</sup>	0.01342 <sup>9</sup>	14.0 <sup>3</sup>
Naphthalene	0.7 <sup>1</sup> 0.12-0.65 <sup>2</sup>	--	0.0198 <sup>9</sup>	--	0.5 <sup>3</sup> -0.93 <sup>6</sup>	0.00032 <sup>3,4</sup> , 0.53 <sup>6</sup> , 0.067 <sup>9</sup>	0.10 <sup>3</sup> , 0.0142 <sup>9</sup>	0.14 <sup>3</sup>
Benzo(a)pyrene	0.00007- 0.00028 <sup>2</sup>	--	--	--	--	0.00032 <sup>4</sup>	0.0775 <sup>9</sup>	--
EDB	0.01 <sup>1</sup> , 0.00007- 0.02 <sup>1,2</sup>	--	--	--	--	--	--	--
Tetraethyl lead	--	0.0018 - 0.15 <sup>7</sup>	0.0000264 -0.00013 <sup>7</sup>	--	--	--	--	0.6-1.1 <sup>5</sup>

-- data not available

\* waste oil may include industrial oils as well as crankcase oil.

\*\* total carcinogenic PAHs reported in diesel 0.00032%<sup>4</sup><sup>1</sup> EPA, 1988a<sup>2</sup> California, 1987<sup>3</sup> Stokman, 1987<sup>4</sup> Lee, et al, 1988<sup>5</sup> Hess, 1979<sup>6</sup> Dunlap and Beckman, 1988<sup>7</sup> CBC, 1990<sup>8</sup> Robbins, 1990<sup>9</sup> EPA, 1988b



# State of Utah

RECEIVED JUN 11 1997

## DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF SOLID AND HAZARDOUS WASTE

Michael O. Leavitt  
Governor

Dianne R. Nielson, Ph.D.  
Executive Director

Dennis R. Downs  
Director

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P.O. Box 144880  
Salt Lake City, Utah 84114-4880  
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June 9, 1997

Harlan Hatfield  
COVOL Technologies, Inc.  
3280 North Frontage Road  
Lehi, Utah 84043

Subject: Regulatory position of the Utah Division of Solid and Hazardous Waste for recovery of fines at the Wellington, Utah, coal wash facility

Dear Mr. Hatfield:

On May 30, 1997, COVOL initiated a pre-design meeting with the Department of Environmental Quality and the Division of Oil, Gas, and Mining. COVOL was seeking the regulatory requirements for developing a process in which coal fines are recovered from an old coal wash pond and subsequently converted to a useable product.

During the meeting, a question was raised regarding the regulatory status of coal fines that were recovered from the original (and closed) coal wash ponds. Upon discussion with personnel in the Division of Solid and Hazardous Waste, a determination was made that our Division would not regulate this recovery. These wastes fall under the exclusion found in the definition of solid waste as found in *Utah Code Annotated*, 19-6-102(14).

If you have any further questions regarding the regulatory status of wastes or would like to discuss this letter, please call Roy Van Os at 801-538-6170.

Sincerely,



Dennis R. Downs, Executive Secretary  
Utah Solid and Hazardous Waste Control Board

DRD/RVO/sm

c: Stephanie Bernkoph, EQOAS  
Brian Buck, JBR Environmental Consultants  
David Cunningham, B.S.N., R.N., Acting Dept Dir, Southeast Utah Public Health Dept  
F:\SHW\SPB\R\VANOS\WPCOVOL\LET



# Facsimile Communication



**Mountain States Analytical, Inc.**  
The Quality Solution

Additional Testing for pH:  
on Tailings Water

MSAI Sample: 67562  
Sample ID: Filtered Washed Tails (T)  
Waste Water

(see Appendix TW)

## CONFIDENTIAL MATERIAL

If received in error, please notify sender at once.

To: Bill Fuller

Company: JBR

Fax No.: 942-1852

Date: Dec. 19, 97

From: RE Larsen

Number of pages 1 (Including this cover sheet)

HCL - 12 MOLAR  
HNO3 - 14 MOLAR  
CONCENTRATED

Comments: 8.3 x 10<sup>-8</sup> moles of strong  
acid (HCl, HNO<sub>3</sub>) to bring  
1 liter of 7.77 pH liquid  
down to 7.00 pH. If using a  
diprotic acid (i.e. H<sub>2</sub>SO<sub>4</sub>) then  
you only need 4.15 x 10<sup>-8</sup> moles.

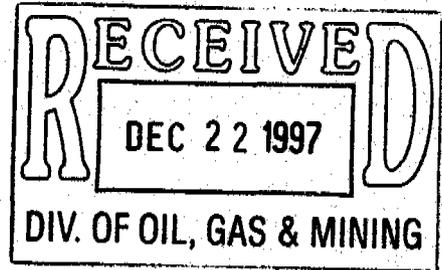
If you do not receive all of the pages or have problems with transmission,  
please call (801) 973-0050 as soon as possible.

*Ralf*



December 22, 1997

Mr. Daron Haddock  
 Division of Oil, Gas & Mining  
 1594 W. North Temple, Suite 1210  
 Salt Lake City, UT 84114-5801



RE: ~~Submission of Additional Information in Response to December 15, 1997 Technical Analysis - NEICO, Wellington Preparation Plant, ACT/007/012, Carbon County, Utah~~

Dear Mr. Haddock:

*#2 Copy Daron*

This submission is in response to the Division's December 15, 1997 technical analysis on the amendment to the above referenced permit. These changes provide the information requested and comply with the discussions held between yourself and staff and myself and Tim Thompson in your offices last Friday, December 19th.

We greatly appreciate your willingness to move this review and approval along as rapidly as you can. Covol will be ready to start their plant within the next week or two and will need your approval to do so. We view Sharon's offer to review this material tomorrow and prepare a recommendation for approval on the same day as an extraordinary effort. Thank you very much.

Sincerely,

A handwritten signature in cursive script that reads "Brian W. Buck".

Brian W. Buck  
 Vice President

cc: Steve Brown  
 Harlan Hatfield  
 Patrick Collins  
 Steve Traweek