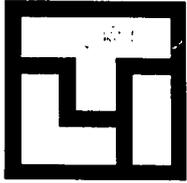


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NIROP FRIDLEY
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TECHLAW INC.

K013.0100.DRDL.012

January 9, 2000

Mr. Thomas Bloom, Work Assignment Manager
U.S. Environmental Protection Agency
Region 5 SM-6J
77 West Jackson Boulevard
Chicago, Illinois 60604

Reference: EPA Contract No. 68-W4-0063; EPA Work Assignment No. 08-05ED; Naval Industrial Reserve Ordnance Plant (NIROP); Review of the July 28, 1999 United Defense Response to the June 28, 1999 CERCLA 104(e) Request for Information, NIROP Site; Deliverable Task 2.8.1

Mr. Bloom:

As per your request, TechLaw has reviewed the above-referenced documents and evaluated the resulting information with respect to the "filling in" of two areas which now comprise part of the Anoka County Park located in Fridley, Minnesota. The areas referenced in the documents consist of a disposal unit which received building debris and waste foundry sand, and a more expansive series of low areas along the Mississippi River in which foundry sand was disposed. Several drawings, photographs, and descriptions documenting foundry sand disposal are provided. However, only a brief cover letter summary and a one-page memorandum summarizing an interview with a former employee are presented in reference to debris disposal.

Correspondence dated August 1971 through December 1971 document discussions relating to foundry sand disposal held between the FMC Corporation Northern Ordnance Division (FMC) and the Minnesota Pollution Control Agency (MPCA). In addition, several FMC interoffice communications have been provided. In general, these documents discuss the ramifications of on-site disposal of foundry sand, viability of off-site disposal options, and the necessity of related permits/approvals.

According to an October 19, 1971 letter from Wheeler Smith, FMC, to Mr. Larry Johnson, MPCA, a permit had been secured by FMC from the City of Fridley to place approximately 750,000 cubic yards of "common earth fill" on the river-side property. It is further indicated that FMC planned to mix approximately 14,900 tons of waste foundry sand with common earth fill over a two year period. A December 1, 1971 letter from Mr. Blaine Seaborne, MPCA Division of Solid Waste, indicated that a solid waste disposal permit from Mr. Seaborne's office would not be required for the disposal of used foundry sand. However, Mr. Seaborne states that disposal of materials from other plant operations, or other parties, should be prevented.



Mr. Thomas Bloom
January 9, 2000
Page 2

During this period in 1971, several documents (9/29/71, 10/19/71, etc.) reference a binding agent which was added to the core sand, likely prior to processing, at a ratio of approximately 1 to 99, respectively, by weight. Though information concerning the binder is identified as "proprietary", some "informal" information identifies the following approximate binder characteristics:

- 50% Isocyanates
- 48% Phenolic Polyol Resin
- 2% Amines (Catalyst)

While this information provides an approximation of materials added to the sand prior to processing, it is unclear how these characteristics would effect the characteristics of the resulting waste sand, and how these characteristics may impact the environment. No discussion of this issue was provided, nor were any analytical tests results of these waste sands available or provided for review.

The quantity of information presented concerning the disposal of construction debris is very limited. According to information presented in the cover letter and a January 12, 1999 memorandum, concrete, conduit, and various building materials were also regularly disposed near a large culvert adjacent to the Water Works property, located southwest of the south facility parking lot. In addition, building debris resulting from tornado cleanup in 1965 was also disposed in this location.

The letter and associated information indicates that foundry sand and core butts were also disposed in the area near the large culvert, citing both an interview with a former employee and observed conditions along the river bank. The former employee indicated that he was unaware of drummed waste being dumped in this location and that such waste was disposed in the landfill located at the south end of the property (south landfill). According to the former employee, construction debris was disposed along the river to decrease the amount of material being placed in the south landfill. In addition, the January 12, 1999 memorandum references four former employees who are believed to have been involved with disposal activities, however, discussions with these employees did not take place, nor were any plans made to collect additional information from these employees.

Based upon the information presented in the response to the CERCLA 104e response, it appears that the biggest known concern might lie with the potential disposal of the isocyanates used as a binding agent in the foundry sand, within the fill that was disposed of in the land which now comprises the Anoka County Park. Although this constituent itself could present moderate concerns to human health and the environment, additional constituent specific issues were further evaluated and are discussed below.

Mr. Thomas Bloom
January 9, 2000
Page 3

Isocyanates

Isocyanates may polymerize if exposed to temperatures above 175° C. Isocyanates also react with water to produce carbon dioxide, insoluble polyureas (which are relatively non-toxic and inert) and large amounts of heat in an exothermic reaction which increases the evolution of isocyanate vapors. Isocyanates will also generate carbon dioxide and heat (and therefore isocyanate vapors) when they react with bases, acids, alcohols, strong oxidizers and metallic salts. At ambient temperatures, the reaction of isocyanates with water is non-violent; the reaction can take up to 48 hours to occur if allowed to react on its own.

Exposure to isocyanate vapors can lead to symptoms resembling asthma, wheezing, chest tightness, shortness of breath, difficulty in breathing, coughing, fever, chills, nausea, loss of appetite and eye irritation. Exposure to high concentrations may lead to chemical bronchitis and accumulation of fluid in the lungs. Prolonged skin contact may cause redness, swelling, blistering and possible skin sensitization.

According to an October 19, 1971 letter from FMC to MPCA, isocyanates reportedly make up approximately 0.00725% of the (pre-processed) total fill used in the areas that are now part of the Anoka County Park. The "filling in" of these areas occurred in the 1960s and 1970s, and no similar material has reportedly been used as a fill on-site since that time. It is not certain that the fill containing isocyanates was covered or contained in any way; therefore, it is assumed that precipitation has come into contact with the fill over the past 20 years. Due to the relative ease with which isocyanates react with water, it is expected that a significant amount of isocyanates will have already destructed through exposure to rain and snow. The environmental conditions to which the fill has been exposed since the 1970s, and the reports that no new fill containing isocyanates has been used on-site since then, greatly decrease any potential risk that may exist from the presence of isocyanates at the Anoka County Park.

Summary

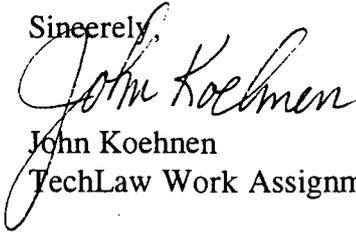
At this time, it is TechLaw's impression, based upon the information presented in the response to the CERCLA 104e request, that there is only a limited (i.e., negligible) potential for these constituents to have caused, or to still cause, impacts to human health or the environment. Specifically, the likelihood exists that a high percentage of these constituents were fully destroyed during the heat in reaction which occurred in the original (casting) process. In addition, subsequent exposure to percolating rainwater and/or melting snow should have acted over time to fully reduce any isocyanate concentrations.

Mr. Thomas Bloom
January 9, 2000
Page 4

In addition, the information provided in the response to the CERCLA 104e request does not provide any information regarding other materials that may have been disposed of in the area near the Anoka County Park that may explain the currently elevated level of volatile organic compounds (VOC's). It should be noted that (four) additional personnel who may be familiar with the former disposal operation were identified in the response, but personal interviews were not conducted. Also, FMC written correspondence regarding the disposal operations were apparently limited to letters and memorandums from August to December 1971. TechLaw did not perform any additional research (except for general constituent information for isocyanates) other than reviewing the CERCLA 104e response, into historical facility operations.

Please feel free to contact me at 312-345-8938 or Mr. Robert Young at 312-345-8966 if you have any questions.

Sincerely,



John Koehnen
TechLaw Work Assignment Manager

cc: P. Parikh, EPA Region 5 RPO
P. Brown-Derocher/Central Files
Chicago Central Files