

THE ASSOCIATED ETHYL COMPANY LIMITED

MEDICAL SERVICES

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DR. P. S. I. BARRY
Chief Medical Officer

OUR REF.

YOUR REF.

5th January, 1961.

Dear Dr. Kehoe,

I enclose copy of some information that our Sales Department has obtained on work done by Ethyl Corporation on the decontamination by weathering of sludge from leaded gasoline storage tanks.

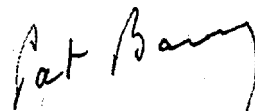
Ethyl Corporation evidently appear to be advocating this method of sludge decontamination as an alternative to the old method of burying the material.

I shall be most grateful for your comments and any views you may have to offer on the acceptability of this method of decontamination, which I may incorporate in my recommendations to the Sales Department relating to this method of decontamination.

I note on the last page of the enclosed copy that it is suggested that there is no danger to persons or animals in the spread-out sludge, even if they were to lie down in the material. I must say I find this rather difficult to accept.

With kindest regards,

Yours sincerely,



(P.S.I. Barry)

Dr. R. A. Kehoe,
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Ohio.

Enc.

PSIB/pby

KE 0006364

N 7737

PROCEDURE FOR
DECONTAMINATION BY WEATHERING OF

SLUDGE FROM LEADED GASOLINE STORAGE TANKS

The disposal of sludge from leaded gasoline storage tanks has presented an ever-increasing problem to the petroleum industry. In many areas there is simply not enough space to dig holes for burying this material. Along the coastal plains it is difficult to find suitable disposal areas because of the high water table. In other cases it has been necessary, for a number of reasons, to dig later into the area where the sludge has been buried.

With all this in mind, Ethyl Corporation has been making a detailed study of the sludge disposal problem and has developed a procedure which is satisfactory, safe and, it is believed, more economical than present methods. This method of disposal is outlined in the following paragraphs. (The old method continues to be acceptable if preferred.)

PURPOSE:

Provide a method for safely disposing of sludge taken from tanks that have contained leaded gasoline.

Standard practice up to now has been to bury the sludge in the ground near the tank being cleaned. The objective of the following procedure is to provide a safe way to dispose of leaded gasoline tank sludge, so that burying will not be necessary.

PROCEDURE:

1. Select a site on which the sludge can be spread.

- a. The site selected for sludge disposal should be in a remote part of the property and, of course, should be within property limits where it will be fenced off from the public. It should be located away from office buildings and if spread near the tank being cleaned, should be outside the surrounding firewall, so that the possibility of gasoline vapors affecting the tank cleaning operations will be eliminated.
- b. It should be so located that personnel working in, on or around the tank will not get into the spreadout sludge.
- c. It can be bare ground or covered with grass or concrete.
- d. It must be fairly smooth and well drained so that water will not stand on it.
- e. The total area, whether in one or several patches, must be sufficiently large to permit spreading the sludge in a layer not over 3" thick. The total area required will, of course, be determined by the amount of sludge in the tank.
- f. It should be so located that air can circulate freely over the surface of the sludge. Exposure to the sun is desirable but not mandatory.

2. Remove sludge from the tank in the usual manner following the safety recommendation approved by API.

3. The sludge can be moved from the tank to the spreading area in available plant equipment. Wheelbarrows, buckets or other small containers may be used for moving it a short distance. Dump trucks, lugger buckets, etc., may be used for longer distances. The containers used should be metal. After use, they should be washed thoroughly with water.
4. The sludge can be spread with hoes, rakes or shovels. It should be spread as uniformly as possible to a maximum thickness of three inches. If the area permits it, a thinner spreading is desirable.
5. Personnel handling and spreading the sludge should be dressed in special clothing as recommended for tank cleaning. Masks will not usually be necessary unless there is no air movement and vapors can be detected by odor at face level.
6. After the spreading is completed the sludge patch or patches should be roped off and marked so that no one will walk through or stand in the sludge.
7. The spread sludge should be left for at least four weeks. After that the sludge may be treated as any other nontoxic waste material. It is satisfactory to remove signs, fences, etc., if any, and leave the sludge in the preselected area permanently. The four-week weathering period applies when the ambient temperature is above 32°F. Therefore, if temperatures under 32° exist during the period of weathering this period of subfreezing temperatures will not be included in the recommended 4 weeks of weathering.

your "Ethyl" representative will be glad to discuss further details with you.

KE 0006966

SLUDGE WEATHERING - MONITORING

Excerpts from Field Bulletin:

"Sludge samples should be taken and analyzed at these times:

1. When the sludge is first removed from the tank for weathering, or as soon afterwards as possible.
2. Four weeks (+ a few days) from the time it is first spread.
3. If the sample taken after four weeks of weathering has a lead content of .002 Wt.% or less, no more samples need be taken. If it is .003 Wt.% or more, additional samples should be taken and analyzed at approximately two week intervals until the lead content of the sludge drops to .002 Wt.% or below.

At each of these times three sludge samples should be taken and analyzed in order to confirm the findings.

In addition to the sludge sampling and analyzing, two Lead-in-Air checks should be made at the same time. The air samples should be taken at a point 4" above the surface of the sludge in the middle of the largest patch. If this sample should give a reading of four or more on the Hellige Comparator other samples should be taken to determine the boundary of the contaminated air. (It is not expected that a 4 reading will be found, but if it is, it is important to follow this instruction.)"

"In order to get a good representative sample of sludge after it is spread for weathering, the following procedure should be followed:

Take some sludge from 12 different points over the entire patch of sludge. At each point, try to get material from the top, middle and bottom of the sludge layer. Thoroughly mix the material taken from these 12 points in a bucket or other container. The required amount of sludge for the analyses can then be taken from this composite mixture. It can be shipped to laboratory in conventional pressed lid tin container.

Whenever the weathered sludge analyzes .002 Wt.% organic lead or less, it may be considered safe and the sludge may then be treated as any other non-hazardous waste material. Until the lead level is reduced to this point the sludge area should be roped off and treated as described in the sludge weathering procedure attached.

Please keep in mind that this is a voluntary program. If for any reason, customers do not choose to dispose of sludge in this manner they, of course, may continue to bury it."

KE 0006967

TABLE I - DETERMINATION OF TEL AND OTHER ORGANIC LEAD IN SLUDGE -
FOUND. TEL AND OTHER ORGANIC LEAD, PARTS PER MILLION

Time Days	<u>6 inch Patch</u>		<u>4 inch Patch</u>		<u>2 inch Patch</u>	
	<u>TEL</u>	<u>Organic</u>	<u>TEL</u>	<u>Organic</u>	<u>TEL</u>	<u>Organic</u>
0*	337	6.4	374	3.1	454	2.5
2	296	3.1	263	4.1	161	2.2
6	202	7.6	152	5.9	66	2.7
14	107	5.6	64	4.2	1.6	2.7
21	86	4.9	40	4.1	1.4	3.1
28**						
42	40	10.5	15	4.6	1.3	1.4

* Immediately after spreading sludge.

** For this data, analytical results were questionable and are not report

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TYPICAL DATA FROM SLUDGE WEATHERING TESTS

TABLE II

Amt. of Weathering Days	TEL ¹ & Other Organic Lead, PPM ²				LIA ³ READING	
	2" Thick Patch		4" Thick Patch		Micrograms per cubic foot air	
	TEL	Organic	TEL	Organic	Waist Level Above Sludge	3" Above Sludge
0	38.0	0.2	48.0	0.3		
5	2.9	.1	10.6	.1		
8	1.1	.1	2.3	.1	1	1 (1 Day)
17	.7	.4	2.0	.0	1	1 (2 Days)
24	.6	.2	.7	.2	1	1 (5 Days)
31	.5	.1	.3	.0		

TABLE III

Amt. of Weathering Days	TEL & Other Organic Lead, PPM				LIA READING	
	2" Thick Patch		4" Thick Patch		Micrograms per cubic foot air	
	TEL	Organic	TEL	Organic		
0	454	2.5	374	3.1	1.0 - 3.0	
2	161	2.2	263	4.1	2.0	
6	66	2.7	152	5.9	1.0 - 1.5	
14	1.6	2.7	64	4.2	trace - 1.0	
21	1.4	3.1	40	4.1	0.5 - 1.0	
42	1.3	1.4	15	4.6	trace - 1.0	

The LIA values remained almost constant for the duration of both tests even though the lead content was dropping.

From the LIA data it would appear that there is no danger of inhaling a harmful quantity of lead, even if a person or animal lay down in the sludge, provided there is nothing to restrict normal air movement.

The lead content of the sludge in about three weeks time dropped 90% or more in the 4" thick patches and 98% or more in the 2" thick patches. In the 4" patch the total TEL and organic lead dropped to .4 ppm in one case and .9 ppm in the other.

(1) Methyl lead

(2) PPM = per million

(3) Lead in air from micrograms per cubic foot is considered safe for something for an 8 hour day, limited to one such period per day.