

Attach. 3

July 30, 1963

J/O 29671

Entomology Dept., St. Paul Campus

Prepare hole approximately 8' x 8' x 8' to allow for burial of insecticide. Pickup truck will come Thursday a.m., August 1, with one and possibly two loads of paper bags and drums for burial. This was requested by Mr. EMM Cutkomp who had cleared it with Gus Schaffler of Public Health. If there are any questions, please call Mr. Cutkomp at 647-3376, or his secretary at 647-3512.

mm

17-4800-

0325-2

Project 1723H

COMPLETED

(e) N.B.

8-1-63

August 2, 1963

3/0 29672

0100-2306-2 -- Pathology Department

Prepare hole for burial of approximately 100 boxes (12 quart size)
which Pathology Department will bring out from Campus on Wednesday,
August 7. Requested by Helen Christofferson, phone 373-2767.

SM

COMPLETED

(s) 71.8.
8-7-63

0100-2221-2

August 15, 1963

J/O 29680

The Horticulture Department is bringing one station wagon load of chemicals to be buried on Monday, August 19, 10:00 a.m. The chemicals are toxic and are contained in bottles, drums, and cans. Please do necessary.

IHT/mm

P.S. Make sure that the driver stops in here at the office as we have no budget number. He is to bring it with him.

COMPLETED

(c) N. K.

8/19/63

Burial of Material for Campus - Cost-

2-19-61
fkt

Date	MO	J.S. #	Size	Digging Only		Total
				Lab	Equip.	
7-3-59	1691	25391	Sch. of Med.	4x4x4		36
4-12-59	1519	25727	Bacteriology	6x6x6		9
11-3-59	1519	26524	Anatomy	6x6x6	21.41 R-63 150	2291
5-2-60	1519	27348	Environmental Health			
7-60	1507	27599	Plant Pathology	6x6x6	25.71 R-72 150	37.22
5-60	1507	27746	Hog. Lab. (Anatomy)	6x6x6	23.80	23.80
5-60	1507	27747	Anatomy			
9-2-60	1507	27772	Bacteriology	6x6x6	23.12 R-72 75	23.5
Oct. 60	1507	27899	Anatomy	4x4x4	18.78	18.78
Nov. 60	1507	27932	Pl. Specimen			
Dec. 60	1507	27925	Chemistry			
2-61	1507	28114	Immunol. Tech.			
4-61	1507	28201	Hog. Lab.			
5-61	1507	28261	U.S. Hospital - Hdg. ^{Bury 4} garbage cans		998 R-71 1.75	11.75
7-11	1507	28256	Chemistry			
10-41	1507	28299	Micro. Specimen	2x8x8	No Inf.	
1-61	1507	28304	Micro. Specimen	8x8x8	3.52 R-70	53.22
1-61	1507	28305	Micro. Specimen	6x6x6		

March 8, 1968

Memorandum

To: Mr. Donald Holberg, Senior Engineer, Plant Services

From: Roger DeRoos and John Teske

Subject: Chemical waste disposal area at the Rosemount Research Facility

The information in the following memorandum is in regard to the chemical waste disposal area at the Rosemount Research Facility. It appears that, from our previous discussions and investigations of alternative schemes, the most suitable method of disposal at the present time is to burn and bury the wastes at this location. Of course, there always exists the possibility that in the future there will be some new type of development for disposal of these wastes, such as a small ultra-high temperature incinerator, whereby the residue and by-products discharged to the environment will not be of a hazardous nature.

The present location appears to be a reasonable one, both from an air and water pollution standpoint. The site is fairly well isolated, the nearest inhabitants being approximately one-fourth mile to the east of the veterinary medicine farm. The nearest well is approximately one mile from the site. The advantage of having wells some distance from the site is that, after the chemicals have reached the ground water, the increased distances give greater dilution; and for those chemicals which tend to degrade when in contact with water, there is a greater time for degradation.

The geology of the area is not the most ideal for subsurface disposal of chemical waste, since the upper strata are for the most part sand and gravel. This is evidenced by visual inspection of the site and information obtained from logs of wells located within a mile or two of either side of this site. However, it was also observed at the site that the upper 30 feet of material is a fine sand mixed with loam. The loam mixed with the sand should to some extent retard leaching and increase the sorptive capacity of the soil.

The main advantage of this site is that the water table is located approximately 95 feet below the surface of the ground. This gives more opportunity for the chemicals to be degraded in the zone of aeration before coming into contact with the water table; allows for a greater degree of sorption, since the chemicals must pass through a large depth of material; and gives a greater dilution capacity with time, since only a small quantity of the chemicals reach the ground water each time it rains. The location is also advantageous since both ends of the ditch where the chemicals will be buried terminate at a dead end. This will prevent surface water drainage from carrying with it a residue of chemicals.

March 8, 1968

As we previously discussed, the unloading and dumping area should be surrounded by a chain linked fence. Both ends of the ditch included in the fence should be barricaded with compact earth. This is to further preclude the possibility of any surface water entering this area.

Any of the wastes which are not burned should be immediately covered with at least six inches of compact fill. The final cover over either burned or unburned chemical waste should be compact earth at a depth of at least two feet.

Safety precautions for the protection of the employees involved with the actual disposal should include the present procedures regarding the use of rubber gloves, face shields, emergency water supply, and a two-man operation. The present practice of remaining up-wind of the disposal pit should also be continued.

At least two blast shields placed up-wind for the protection of the men dumping the chemicals should be provided. A suggested design for the shields is attached. The design is based on a constant over pressure of approximately 0.18 psi, which is roughly equivalent to a 100 mph wind or a wind velocity eight feet away from the blast center of a stick of dynamite. The instantaneous over pressure from the dynamite blast would however be approximately 2.9 psi, which is in the lower region of pressure required to rupture human eardrums. The shield is intended for the protection of two men.

The bottom of the pit should be lined with rocks and cement blocks to insure that all glass containers are broken when tossed into the pit. After placing the rocks in the pit the practice of removing the caps from the containers should be discontinued to reduce the hazard of chemical splashes and possible explosions. Explosions have resulted simply from the removal of caps.

A remote ignition device should be used in lieu of the present practice of throwing a lighted box into the pit. It is suggested that you consider the use of an L.P. torch. The L.P. tank should be well back from the edge of the pit and a pipe laid down the slope of the pit. The end of the pipe could be fitted with a burner nozzle and a spark igniter with the igniter fired by an automobile ignition coil. Electricity for the coil could be obtained from the battery on the pick-up which is used to take the chemicals to Rosemount. If finances permit, it would be advisable to incorporate the igniter in with each blast shield so that the men will always be up wind when igniting the pit.

If additional information or help is desired with the chemical disposal system, we will be glad to give assistance wherever possible.

1970 Report on
Solid Waste
at U of M

TOXIC AND HAZARDOUS WASTE

Classroom and research activities at the University regularly generate flammable, toxic, and/or explosive chemical wastes which afford a serious safety hazard on campus. These hazardous materials include routine wastes from Chemistry and Bio-Medical Laboratories, as well as a considerable quantity of pesticides generated in agricultural research, including surplus pesticides from the University's out-state agricultural experiment stations. Appendix E illustrates the types of chemicals collected from the University's facilities.

Since 1960 the University's Division of Environmental Health and Safety has reviewed the procedures for the handling and disposal of chemical wastes, and in collaboration with the Physical Plant Maintenance and Operations, has been actively engaged in the segregation, collection, and disposal of chemical substances generated in many of the University's Twin Cities Campus research laboratories. Prior to that time such chemicals were either flushed into the municipal sewer system or included with regular refuse for incineration or landfill burial. Now the University has initiated a chemical labeling system to caution users that some chemicals must not be discharged into building drains. Presently Plant Operations conducts a routine pickup by regularly scheduled weekly stops and unscheduled on-call collection of waste chemicals from the University's research laboratories.

The six regular weekly pickup locations are Chemistry, University Laundry, Appleby Hall (pharmacy), and three stops at the University Hospitals Medical Center.

Each area is instructed in proper packaging of the hazardous waste so that the chemical wastes are pre-packaged when the pickup unit arrives on Fridays for waste collection. In addition, the Division of Environmental Health and Safety distributes instruction sheets for the proper disposal of waste chemicals to laboratory personnel. (See Appendix F)

Presently a conventional, unmarked, open-box pickup truck transports most chemical wastes to the Rosemount Research Center. However, a more careful procedure is used for explosive, shock-sensitive materials. Formerly when such materials were transported in the pickup truck, a blast box specially designed to direct any explosion that might occur away from the cab was placed in the back of the truck. Now explosive, shock-sensitive materials are transported to Rosemount in a specially designed explosives carrier during the early morning (5 a.m. to 6 a.m.). That carrier unit consists of a dump truck containing a box surrounded with sand bags. The hazardous materials are transferred from the buildings in a cask on dolly wheels specially designed for handling explosives. Consequently, if an explosion should occur, the blast would be directed upwards rather than injuring persons transporting the materials to the carrier vehicle. Calls for pickup of those shock-sensitive materials are handled immediately with special separate runs to Rosemount rather than by the routine Friday pickup.

Presently all chemical wastes are delivered to the Rosemount Research Center, about 22 miles from the main campus (See Figure 1) with subsequent disposal by burial or open burning. Open burning is restricted to a trench about 60 feet long, surrounded with an eight foot chain link fence and posted with hazardous chemical waste disposal signs. That trench, possibly at one time a man-made channel for conveyance of liquid wastes, has been diked at both ends to exclude all surface runoff. Two blast deflector shields are positioned on each side

of the burning trench for personnel safety. A large pit adjacent to the burning trench is used for burial and detonation of extremely hazardous and toxic materials.

Safety equipment used during disposal includes face shields, rubber gloves, protective clothing, plus a complete first-aid kit and portable eye wash fountain in the carrier unit at all times.

The hazardous waste disposal program undergoes nearly continuous revision. New procedures for waste handling are being adapted, while a completely new design has been proposed for the carrier units used to transport the hazardous wastes. At the Rosemount disposal area the deflector shields are being modified. Robert Reid, and Environmental Engineer with the Department of Physical Plant, is supervising the fencing and completion of a remote visitor viewing area at Rosemount.

The Department of Physical Plant and the Division of Environmental Health and Safety concur that a need exists for extensive revision of the physical facilities for disposal of these wastes, both for containment to prevent leaching and for improved combustion of gases during burning.

The quantity of toxic and hazardous wastes deposited at Rosemount demands ecologically sound disposal practices. That site receives approximately 6,500 gallons of liquid solvents and 2,000 pounds of solid chemicals each year. About 200 pounds of pesticides are stored each year at Rosemount until other suitable disposal methods are found. An additional 50 to 100 compressed gas cylinders are delivered to Rosemount each year.

Workers protected behind blast shields dump most cartons of waste solvents and chemicals, boxed for shipment, intact into a small pit. If auto-ignition doesn't occur during unloading, a flare is used to ignite the cartons. Partially combusted residue is burned in succeeding weeks. Formerly pesticides were

buried nearby whereas gas cylinders were ruptured with explosives, then buried. Presently pesticides are stored in a building at the Rosemount Research Center pending direction from either the U.S. Environmental Protection Agency or the Minnesota Pollution Control Agency regarding the technique for disposal.

The University continues these disposal practices because the present state of technology suggests that burial of these chemicals in a remote area is a reasonably sound method of disposal. The Rosemount site was chosen primarily because it is owned by the University and because of its remote location as well as the distance of ground water from the surface.

THE MINNEAPOLIS

UNIVERSITY OF MINNESOTA
ROSEMOUNT RESEARCH CENTER
ROSEMOUNT, MINN.

Tuesday, July 6, 1971

STAR

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UNIVERSITY OF MINNESOTA'S CHEMICAL DUMP AT ROSEMOUNT RESEARCH CENTER

Minneapolis Star Photo by Jack Gillis

The ditch is fenced in and posted with warning signs

UNDERGROUND WATER FEARS

'U' to ditch waste ditch?

By BETTY WILSON
Minneapolis Star Staff Writer

For the last 10 years the University of Minnesota has been getting rid of waste chemicals by burying them in a ditch at the University Research Center at Rosemount.

Some are poisonous, flammable, explosive or otherwise hazardous wastes such as gases and substances used in University laboratories. Insecticides, pesticides and herbicides are dumped in the ditch.

Each year about 6,500 gallons of liquid solvents and 2,000 pounds of solid chemicals are taken to the Rosemount site for disposal by the university.

Containers of gas and explosives are detonated with TNT in a nearby pit before they are buried in the ditch. This is done so that no one coming onto the ditch someday in the future may be injured in a spontaneous explosion. (The ditch is fenced in and posted with warning signs.) Some solvents are burned in the open at the site.

Some university officials have expressed fears that the dumping may be polluting the soil and groundwaters in the area.

The dump is over the inner edge of the Twin Cities artesian basin. University spokesmen say the area is the most productive source of water supply for the metropolitan area.

G. Blaine Seaborn of the Minnesota Pollution Control Agency said the agency has permitted the dumping and open burning of the university's toxic and hazardous waste at Rosemount because, "They are doing the best they can under our present knowledge."

Agency regulations prohibit open burning of waste. The regulations state that toxic and hazardous wastes must be disposed of "in a manner to conserve the environment and protect the public health and safety."

Donald Kyser, an engineer with the agency's solid-waste division, said the university's waste problem is unique because it contains "a lot of weird stuff."

"It's pretty tough to figure out what to do with large amounts of toxic wastes," he said.

Several sanitary landfills in the Twin Cities area are equipped to handle small amounts of hazardous waste.

The agency stopped a Twin Cities manufacturer from disposing of paint thinner and paint-related waste by having a farmer bury it in trenches near Glencoe. The manufacturer now is taking it to a commercial incinerator at Shakopee.

The agency advised the Minnesota Department of Agriculture to hold onto about 6,000 pounds of DDT which the department wanted to bury.

Keyser said it is hoped that federal agencies soon will provide national recovery and disposal sites for large quantities of chemicals where the department can take the DDT.

Roger DeRoos, a public health engineer at the university said, "We don't know of any better methods than we are now using to get rid of this."

The University toxic waste is "a lot of little bits and pieces of different things," which might have an explosive reaction if mixed. Because of this, an incinerator such as the one at Shakopee cannot handle it as is the case with an industry's waste which is fairly uniform and can be combined, DeRoos said.

He said the university is investigating the possibility of shipping its chemical waste to a firm in Buffalo, N.Y., which handles the recovery and disposition of toxic waste. But this would be expensive, and also involve a hazard in shipping, DeRoos said.

DeRoos said the university has done some limited monitoring since last December of the groundwater around the Rosemount dump. Three test wells were dug and the part-time services of a chemist retained to analyze samples. No harmful effect on the ground water has been discovered, he said.

The University Environmental Health Division is proposing to seek federal funds for a \$92,000, two-year study at the Rosemount dumping site to determine if it is polluting the environment.

The study proposal calls for digging more wells and testing soil and water samples at various levels to find out if the chemicals are filtering down to the water table which lies 70 feet under the surface. The study also would show, it is hoped, if the chemicals are decomposing in the ground before they reach the water table, or if they are impairing the groundwater and causing a public health hazard.

The study project will be applicable, it is expected, in planning disposal sites around the country for toxic and hazardous wastes.

RECEIVED

SEP 12 2 32 PM 1972

UNIVERSITY HEALTH SERVICE
PHYSICAL PLANT

September 6, 1972

Memorandum

To: Mr. Norman Ellingson, Superintendent, Rosemount Research Center

From: Roger DeRoos, Public Health Engineer

Subject: Industrial Liquid Wastes at the Rosemount Research Center

A list was recently received from Mr. Norman Ellingson indicating that there are 37 commercial tenants at the Rosemount Research Center. Most of these tenants having liquid waste facilities, discharge to the collection system at the site. The collection system empties into an oxidation pond.

It is my understanding that Mr. Reid is looking into the matter of obtaining a permit from the Minnesota Pollution Control Agency to operate this waste treatment facility.

On August 1, 1972, Mr. Reid and I visited several of the industrial waste producers to discuss with them what types of materials they are discharging to the sewer. The survey did not include questions about amounts of human wastes (toilets, laboratories, etc.). Most of the commercial tenants are using the buildings for storage; therefore, it was only necessary to visit a few of the sites. The following comments relate to the interpretation of these visits.

1. The repair shop operated by Glen Berens does not have a drain, according to Mr. Robert Ferguson, who accompanied us on our visits to the companies.
2. The Concast Company discharges only a small amount of water to the one floor drain present in that facility, according to Mr. Ben Tilson of the Concast Company.
3. Mr. Ken Hansen of the FluidDyne Engineering Corporation indicated that they discharge approximately one gallon of alcohol per week to the sewer, otherwise the remainder of the waste is water.
4. There was one small floor drain in the facilities occupied by the Mosquito Control District. It was indicated by one of the employees that

September 6, 1972

this drain is not used for discharge of any liquid wastes. The supervisor for this facility was not available at the time of our visit. Mr. Ferguson indicated that his name is Mr. Roy Rademaker and he could be contacted at 423-1913.

5. The Minneapolis Medical Research Foundation leases an animal holding facility for turkeys and dogs. The employee present at the time of our visit indicated that the facility houses approximately 70 turkeys and from 20-40 dogs. He suggested that if we wanted to obtain further details concerning the research that we should contact Dr. Claude Hitchcock (telephone: 348-2344 of General Hospital).

6. Mr. Steve Lund of the Technical Ordnance indicated that only water is discharged to the liquid waste collection system from that facility. Solvent soaked materials are burned separately in an open burning area located at the Rosemount Research Center. Mr. Lund indicated that they are federally approved for this type of burning at this location. It was observed that the site consists of an approximately 10 foot in diameter corrugated culvert set vertically, with dirt mounded up around it, and a screen over the top.

7. One of the employees of the Tel-E-Lect Company indicated that only water is discharged to the sewer. Resin materials are contained in drums and brought to the University operated landfill site (not our toxic and hazardous waste disposal site) at the Rosemount Research Center.

8. The Reese Metal Weather Stripping Company does not discharge liquid waste to our sewer system but rather to two tile drainfields located just west of their buildings. One of the tile drainfields is for discharge of cooling water and the other is for human waste from their toilet facilities.

From the above interviews of companies using these facilities, it would seem that there is little problem with discharge of toxic, flammable and otherwise troublesome industrial waste to our sewer system at the Rosemount Research Center. However, this might bear some further evaluation by sampling and analysis of the sewage at the point where it enters the pond.

There are two solid waste handling procedures by the industries which should be revised. From the Tel-E-Lect Corporation, the resin material in drums should be shipped to a licensed Minnesota Pollution Control Agency approved toxic and hazardous waste disposal site. Similarly, the open burning of chemical wastes from the Technical Ordnance should be reviewed. I would see no reason why this should not also require a permit of the Minnesota Pollution Control Agency, or they should also ship their waste to a licensed toxic and hazardous waste disposal site. If the University wishes to provide this service within their own facilities, we would need to do so in a licensed and approved site.

RLD/kal

cc: Mr. Robert Reid