Site Review And Update

UNIVERSITY OF MINNESOTA
(a/k/a ROSEMOUNT RESEARCH CENTER)

ROSEMOUNT, DAKOTA COUNTY, MINNESOTA

CERCLIS NO. MND980613780

MAY 18, 1993

REVISED

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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia

Site Review and Update: A Note of Explanation

The purpose of the Site Review and Update is to discuss the current status of a hazardous waste site and to identify future ATSDR activities planned for the site. The SRU is generally reserved to update activities for those sites for which public health assessments have been previously prepared (it is not intended to be an addendum to a public health assessment). The SRU, in conjunction with the ATSDR Site Ranking Scheme, will be used to determine relative priorities for future ATSDR public health actions.

REVISED SITE REVIEW AND UPDATE

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Prepared by:

The Minnesota Department of Health
in Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

FOREWORD

This document summarizes potential public health concerns at a Superfund site in Minnesota. It is based on a formal site evaluation prepared by the Minnesota Department of Health (MDH). A number of steps are necessary to do such an evaluation:

- Evaluating exposure: MDH scientists begin by reviewing available information about environmental conditions at the site. The first task is to find out how much contamination is present, where it's found on the site, and how people might be exposed to it. Usually, MDH does not collect its own environmental sampling data. We rely on information provided by the Minnesota Pollution Control Agency (MPCA), U.S. Environmental Protection Agency (EPA), and other government agencies, businesses, and the general public.

- Evaluating health effects: If there is evidence that people are being exposed—or could be exposed—to hazardous substances, MDH scientists will take steps to determine whether that exposure could be harmful to human health. The report focuses on public health—the health impact on the community as a whole—and is based on existing scientific information.

- Developing recommendations: In the evaluation report, MDH outlines its conclusions regarding any potential health threat posed by a site, and offers recommendations for reducing or eliminating human exposure to contaminants. The role of MDH in dealing with hazardous waste sites is primarily advisory. For that reason, the evaluation report will typically recommend actions to be taken by other agencies—including EPA and MPCA. However, if there is an immediate health threat, MDH will issue a public health advisory warning people of the danger, and will work to resolve the problem.

- Soliciting community input: The evaluation process is interactive. MDH starts by soliciting and evaluating information from various government agencies, the organizations responsible for cleaning up the site, and the community surrounding the site. Any conclusions about the site are shared with the groups and organizations that provided the information. Once an evaluation report has been prepared, MDH seeks feedback from the public. *If you have questions or comments about this report, we encourage you to contact us.*

Please write to: Community Relations Coordinator
Site Assessment and Consultation Unit
Minnesota Department of Health
121 East Seventh Place/Suite 220
Box 64975
St. Paul, MN 55164-0975

OR call us at: (612) 215-0916 *or* 1-800-657-3904
(toll free call—press "4" on your touch tone phone)

INTRODUCTION

A Public Health Assessment was prepared by the Agency for Toxic Substances and Disease Registry (ATSDR) for the University of Minnesota Rosemount Research Center (UMRRC) Superfund site in April, 1989. The UMRRC Superfund site (Site) consists of the following waste disposal areas: George's Used Equipment (GUE), Porter Electric, US Transformer, the Burn Pit, and the Volatile Organic Compound (VOC) groundwater contamination. Other areas within the UMRRC that were considered for, but not included in, the Superfund process included the Coates Dump and Oxidation Pond. The Oxidation Pond is a low-lying sewage storage area that was utilized when the sewage handling system used by the U.S. Army was closed. Since three underground septic systems have been installed, it is no longer used for that purpose. While low levels of contamination were identified at both of these areas, concentrations were below levels of health concern and they were not considered to be a significant threat.

The Minnesota Department of Health (MDH) subsequently prepared a Site Review and Update (SRU) for ATSDR for the Site on May 18, 1993. The Site was listed on the Federal National Priorities List (Federal Superfund list) in 1985 and is also included on the Minnesota Permanent List of Priorities (State Superfund list).

Remedial activities at the Site are essentially completed. At the request of the Minnesota Pollution Control Agency (MPCA), MDH is reviewing the Site at this time to assist in ensuring that all public health concerns have been addressed prior to delisting. Therefore, this SRU will briefly provide an update of Site activities since the previous documents, assess current Site conditions, and make recommendations on future activities. The document is based on information obtained from a review of MDH and MPCA files, discussions with individuals associated with the Site (e.g. Dakota County Environmental staff and University of Minnesota staff), and a Site visit.

SUMMARY OF BACKGROUND AND HISTORY

Site Description and History

The UMRRC is located about 15 miles southeast of the Twin Cities metropolitan area and was mainly used for farming until 1942, when the War Department took over 11,500 acres to be used as a munitions plant. In 1945 munitions production ceased and in 1947, 8,000 acres of the property was deeded to the University of Minnesota (University) for the establishment of a research center. Over the years, parcels have been sold off, leaving the current area of around 7,500 acres. Of this 7,500 acres, about 3,000 are devoted to the University Agricultural Research Station. Policy discussions are currently being conducted within the University

future for agricultural research and other University needs (one faction would like to expand agricultural research, another foresees the University maintaining control over the land but for different uses, and still a third would like to liquidate the assets to assist in current budget problems). The agricultural research areas currently comprise the southern and western portions of the UMRRC. The Superfund Site is located within the UMRRC.

Past and present activities at the UMRRC include agricultural research, light industry (both service and manufacturing), disposal of wastes generated at the University, storage areas for a variety of concerns (e.g. parking lots for truck driving training school), and a small private airstrip. One area of the UMRRC has been used as a training area for students learning to operate large earthmoving equipment. Large open excavations and piles of dirt are constantly being moved and refilled in this area. This has lead to allegations of illegal dumping and burying of unauthorized materials, likely due to a misunderstanding regarding the nature of the earthwork. The University is not aware of any inappropriate dumping that occurred in these areas. There also are many exposed and buried concrete foundations and pads. These date back to the initial construction for the munitions plant and the placement of subsequent buildings. They can make plowing and excavation difficult by interfering with the operation of large equipment.. Rosemount, the nearest city, has 11,086 residents (1994 estimate). General maps of the UMRRC and surrounding area are given in Figures 1 and 2 at the end of this report.

From 1967 to 1974 the University operated a waste disposal/burn pit area at the UMRRC. Liquid hazardous wastes which were disposed of at this location infiltrated into the soil and migrated into underlying groundwater. All identified groundwater contamination is from the Burn Pit area. In 1984, 16 residential wells to the northeast of the Site were found to be contaminated with chloroform from the Burn Pit area. As a result, MDH issued Drinking Water Advisories to 27 homes in the area. These homes were provided with bottled water and hooked into a rural community water system provided by the University in 1989. Ownership and a five year warranty on the water system was transferred to the City of Rosemount in 1992. The remainder of contamination was located in the soil generally near the GUE area.

Environmental Investigations

A Remedial Investigation (RI) into groundwater and soil contamination at the Site was initiated in 1985. Based on data in the RI, a groundwater pumpout and air stripper system was installed in 1987 to control migration of the chloroform groundwater plume. Subsequent evaluation of new toxicological information in 1988 resulted in an adjustment to the health-based guidelines for chloroform (the level was raised from 1.9 ppb to 57 ppb). Since chloroform was the only material identified above standards, all contaminants in the groundwater were now less than all groundwater drinking water criteria. However, since work had already been started and to address local concerns, the University decided to complete the community rural water supply for nearby homes in 1989. While the residential supply system continues to operate, the pumpout system on the Site was shut down in 1991.

Ongoing monitoring has shown a continuing decrease in concentration for contaminants in the plume. Recent reports (see below) have recommended that monitoring be discontinued.

In 1990 a Record of Decision (ROD) was issued which described the methods to be used in cleaning up contaminated soils at the Site. The ROD stated that soil contaminated with lead and copper would be excavated and transported to an off-site landfill. This work was conducted in 1990. Soil containing elevated lead was sent to landfills in Indiana and Alabama.

Soil contaminated with PCBs above 25 ppm were to be treated on-Site by being excavated and heated in a thermal desorbtion unit to vaporize the PCBs, with the vapors then being destroyed by burning at high temperatures in another chamber of an approved mobile hazardous-waste incinerator. The actual remediation was performed by Roy F. Weston, Inc. The primary components of the thermal treatment process (which took 35 trucks to transport to the Site) included the feed hopper, primary and secondary combustion chambers, cooling spray tower, baghouse and scrubber (for air quality control), and the emissions stack. The consolidated soils included spillage from operational areas that were greater than 1 ppm PCB. The final goal, after a 1992 amendment to the ROD, was to leave no contamination above 10 ppm PCB outside of the restricted area in the GUE.

In early 1993 the MPCA requested the Minnesota Department of Health (MDH) review potential health risks from PCB's, dioxins, and lead in air emissions from the incinerator. MDH scientists examined the results of air tests done when this incinerator operated on similar sites in other parts of the country. To analyze the risks, standard risk assessment methods set up by the federal Environmental Protection Agency were used. The assessment results were confirmed by the monitoring of a test burn. MDH determined that cancer risk from PCBs or dioxins in incinerator emissions would be below MDH's criteria for negligible risk. It also was found that residents would not receive a significant exposure to lead.

Excavation and treatment of PCB-contaminated soil was conducted through late 1992 and most of 1993. Initial volumes of contaminated areas were estimated using a series of soil borings. There were approximately 7,000 yd^3 of soil greater than 25 ppm PCB and 3,300 yd^3 of soil with lead levels above 1,000 ppm. In addition, about 415 yd^3 of soil containing PCBs between 10 and 25 ppm were consolidated into a restricted access disposal area in the southern portion of the GUE. All non-burnable material over 25 ppm PCB removed from the excavation areas was sent to a TSCA-approved landfill in Utah. After achieving desired grade over excavated areas with sandy fill (1,000 tons was used over the Site), 10 inches of topsoil was used as a final seedbed/cover. The ash, treated soil, and waste water coming out of the incinerator unit was sampled and tested for PCBs, metals, and pH. Initial release samples were taken using a Dexsil PCB screening kit or an XRF for lead. Final confirmatory samples were analyzed by a commercial lab for greater accuracy and reliability. Waste water was disposed of according to state and federal regulations. The detection limits for these samples were highly variable and were typically between 0.1 and 5 ppm PCB. The majority of samples had detection limits less than 1 ppm PCB.

Community Concerns

Historically, the surrounding community has been active in expressing concern over site details. There has been a lawsuit (residents suing the University over a variety of concerns), public meetings, and external activists employed (e.g. Greenpeace) to help express displeasure with the alternatives chosen. These concerns (which included contaminant of concern selection, safety issues, dioxin/furan assessment issues, fugitive dust, remedy selection, OSHA requirements, and disposition of wastewater) were addressed by MPCA, MDH, and the University prior to and during the remediation. However, as is typical for a large Site of this type, not all residents were convinced at the time.

Currently, there are no active community groups, since most remediation has been completed. However, as final land use decisions are being proposed and amended, the local community is again expressing interest in the Site.

Although the Dakota County Environmental Management section is developing a county-wide inventory of potential sites, no specific inventory has been prepared for the Site. In addition, while the county was active in commenting on Site documents (e.g. RI, remedial action work plan), it has not been involved with the Site since the completion of excavation and treatment of soils in 1993. Other county activities in the vicinity include a review of conditions at the Coates dump (directly within the eastern boundary of UMRRC) and a small location within the city of Rosemount. Neither of these are associated with contamination or actions at the Site.

CURRENT SITE CONDITIONS

Site Visit

On November 14, 1996, Daniel Symonik, Rich Soule, and Lisa Pogoff of MDH, Fay Thompson of the U of M, and Dave Douglas and Helen Goeden of MPCA conducted a walking/windshield tour of the Site. Briefly, the following were observed:

- It was a chilly but sunny day, with temperatures in the high 30's, a moderate wind, and no snow cover. Leaves were down from the trees and the ground was frozen solid. The vast majority of the UMRRC is in agriculture (either commercial or large research plots) or lies fallow. When comparing the current landscape to pictures from the 1940's, there are far fewer buildings and many more large trees present today.

- The general area around George's Used Equipment contains few of the original buildings, with only a large concrete pad remaining off to one side. Most of the area was open grassland with knee-high vegetation and an undulating topography (some of it natural, some as a result of excavation and backfilling). No visible staining was observed.

- The US Transformer area was located in and adjacent to a WWII vintage building about 1/4 mile to the east of George's Used Equipment area. Again, most of the area outside the building is tall grass and open areas with rolling small hills.

- The Burn Pit area is marked by flagged fence posts. It is adjacent to (and above topographically) an open depression that was formerly a borrow pit. These low areas have since completely filled in with vegetation. The pit itself is relatively small, measuring perhaps 50 feet by 100 feet. The cap placed over the Burn Pit has raised the level of the ground about 8 feet and now has several trees on it that are about 20 feet tall. The presence of the trees indicates that the cap has been relatively stable since its installation nearly 20 years ago.

Groundwater

Groundwater in the region starts about 70 to 80 feet below the surface and flows generally northeast towards the Mississippi River, with some local deviations due to fractured flow in bedrock. The Burn Pit area was determined to be the only source for groundwater contamination under the Site. Although there were a variety of contaminants identified across the Site (not surprising due to its varied uses), the main concerns center around PCBs, copper, and lead in soil and several VOCs in groundwater. There also have been concerns over potential additivity of toxic exposure (due to the number of compounds found in the groundwater).

However, recent sampling efforts indicate that while there still are some detectable levels of VOCs, all areas of the plume are below their respective Minnesota health based drinking water guidelines (e.g. Health Risk Limits (HRLs)). This remains true even when considering potential additive effects. The termination of the use of the Burn Pit area has resulted in significant declines in groundwater contaminants over time. Monitoring wells located directly adjacent to the Burn Pit confirm that the source has been effectively removed (since they show levels lower than those in the contaminant "slug" that is moving downgradient). These trends are consistently confirmed by sampling events in 1992, 1993, and 1995. Compounds identified in the 1995 sampling included chloroform (26 ppb), 1,2-dichloroethane (1.8 ppb), carbon tetrachloride (1.4 ppb), 1,1,2-trichloroethene (6.4 ppb), and 1,1,1-trichloroethane (0.9 ppb). All of these values are below HRLs.

In addition, 15 residential wells in the area were also sampled. Five of these homes had contaminants identified in the water. Individual hazard indices were all less than 1.0: none of the concentrations were near levels of concern. Additionally, the combined hazard index of all of the contaminants was also less than 1.0. The highest cumulative hazard index calculated was for an industrial well (0.52). The highest residential drinking water well cumulative risk was 0.053. In evaluating monitoring wells, only one (MW-28) had a cumulative hazard index above 1 (it was 1.2). Based on these consistently low results over time, consultants to the University and MPCA have recommended that the groundwater program be stopped and the wells abandoned. However, both MPCA and MDH feel that a

limited number of wells should be retained in case future questions arise regarding groundwater quality.

Groundwater in George's Used Equipment area and the Porter Electric area was also analyzed for acetone, methylene chloride, toluene, chloroform, semi-volatiles, lead, and PCBs. No contaminants were identified at levels of health concern (e.g. above HRLs).

Nearby residents were offered the opportunity to be hooked up to a rural community supply system installed by the University (even though levels in their wells were not above drinking water standards). Not all residents hooked up, though many did. The main supply well for that system is developed in the Jordan aquifer and is located one mile upstream of the current contamination plume.

Air

Exhaust vapors from the thermal unit were incinerated at very high temperatures to help ensure that contamination was not released to the air pathway. A test burn was conducted on-site in March 1993 to ensure that all incineration and air quality control equipment was operating properly. In addition, an air dispersion model was used to estimate possible risks to surrounding areas within a 31 mile (50 km) radius from the Site and the possibility of exposure to dioxin was explored. Although dioxin could potentially be formed as part of the combustion process, it was determined that the maximum levels that were likely to be created would be around 10 ng/m^3 (which is below a 10^5 cancer risk level).

Perimeter air monitoring results collected during the incineration process indicated that all samples were below 1 $\mu g/m^3$ PCB, with a geometric mean of 0.03 $\mu g/m^3$ PCB. In addition, all permit requirements as defined by the Toxic Substances Control Act (TSCA) were met. For example, the incinerator unit was required to meet a standard of "six 9's" (e.g. 99.9999% destruction efficiency). Assuming a 70 kg body weight and 20 m^3 inhalation per day, this (0.03 x 20 = 0.6 μg/day) is well below the oral Health Risk Value recommended by MDH of 0.05 μg/kg/day (0.05 x 70 = 3.5 μg/day).

Therefore, the air exposure pathway, while being of significant community concern, did not (and does not) pose a public health threat. This conclusion is based on the lack of existing exposed contamination, the completion of the soil remedy (i.e. the thermal treatment unit and its emission sources are gone), and the monitoring data collected during remedial activities.

Surface Water

Due to highly porous soil and varied topography at UMRRC, surface run-off is not likely to be a problem. No areas of surface water accumulation were noted during the Site visit. Even low-lying areas did not appear to have held long-term surface water (since vegetation in the lowest areas was similar to that on the slope and upland areas). Any water on the surface is most likely to rapidly infiltrate to groundwater and be transported via that route.

The nearest significant surface water is the Vermillion river, located just south of the UMRRC and several miles away from the nearest contaminated area. Therefore, due to a lack of exposed contamination at the surface and the absence of persistent surface water within the UMRRC boundaries, surface water is not considered a public health concern.

Soil

The largest remedial action taken on the Site involved the excavation and treatment of contaminated soils. Soils contaminated above 1000 ppm lead were removed and sent to a landfill in Indiana if no other major contaminants were present. Some soils containing high levels of both lead and PCBs were sent to an approved facility in Alabama. Remaining contaminated areas generally contained only high PCB concentrations and were located in the vicinity of George's Used Equipment, Porter Electric, or the US Transformer areas. Soil sampling conducted as part of the RI indicated that levels of TCDD were all below 1 ppb in the soil and that no contamination was identified in the vicinity of the Coates dump. See "Current Issues" section for further dioxin discussion.

Therefore, the majority of the work was done at and near the George's Used Equipment (GUE) area. Those soils found to exceed the removal standard of 10 - 25 ppm PCBs were excavated and treated in a thermal desorbtion/incineration sequence. The PCB containment area is located on the south end of the GUE within a fenced-in ("restricted") area and extended up to 35 feet below grade. This constitutes a small percentage of the total land area of the GUE, and a very tiny portion of the total land area of the Site.

The performance standard for the treatment process was <2 ppm PCBs. If the material was above 2 ppm PCB after treatment, it was replaced on the stock pile and run through the system again. If both of the standards were met, the soil was taken back to an open excavation and used as clean fill. If the "cleaned" soil was below the PCB standard but above the lead target, a RCRA Toxic Characteristic Leaching Procedure (TCLP) test was run on the material. If the TCLP result was less than 5 mg/l, the material was used for clean fill. If it failed the TCLP standard, the material was transported to a landfill for disposal. There was some problems encountered when clays in the soils formed balls during thermal treatment. These balls posed both physical (banging around in the chamber) and chemical (incomplete desorption in the middle of the ball) problems. Complete treatment was achieved by adding shredded corn cobs to the feed stock to help prevent the formation of the clay balls. Field methods were utilized to determine the exact extent of excavation required. This was confirmed using more sensitive analytical techniques. Detailed reports (I.T., 1/94; I.T., 8/94) prepared as part of remediation include the precise locations for the excavation of contaminated soil, backfill, and topsoil replacement.

A review of the concentration of contaminants remaining in "cleaned" soil and ash revealed levels for lead generally below 200 ppm and below 1 ppm for PCBs. The majority of the samples were well below these levels. It is unlikely that contamination above 10 ppm PCB remains on the Site outside of the restricted area (i.e. industrial standard has been achieved).

However, there may be some areas that are between 1 and 10 ppm PCB (i.e. residential standard not met in all areas, though it is in most). These areas will be tracked and addressed using deed restrictions to ensure that only appropriate development occurs. It is important that these land use restrictions be enforced into the future to help ensure that a complete exposure pathway is not inadvertently created.

Exposure Pathways of Concern

When a substance is released from a contaminated area it enters the environment. This release does not always lead to human exposure. Exposure to a substance occurs only when an individual comes in contact with it. Exposure routes include breathing, eating or drinking materials containing the contaminant(s), or by skin contact.

If exposure to contaminants does occur, many factors will determine whether harmful health effects will occur and what the type and severity of those health effects will be. Therefore, even if an exposure pathway is complete, it does not automatically indicate that health problems will occur. In order to assess the likelihood of health problems, both the type of material (toxicity) and the amount and location of the release (exposure) must be considered.

Based on the site conditions described above, there are no current complete exposure pathways. Therefore, there are no current public health concerns associated with the Site. However, potential exposure pathways that could become a concern in the future include direct contact with soils containing low levels of contaminants by future residents living in restricted areas. Future residents could also potentially come in contact with residual groundwater contamination if a well were developed within the plume. This is not likely to be a health concern due to the already low concentrations and biodegradation that will occur over time.

If the land use in the area changes significantly from what is currently planned (e.g., residential development occurs in restricted areas), or new toxicological information becomes available on Site contaminants (i.e. standards are made more restrictive), then the potentially exposed populations would need to be reevaluated in light of the new information.

CURRENT ISSUES

Prior to delisting, a future land use specification needs to be prepared to evaluate potential exposure pathways. Towards this end, the U of M has a consultant reviewing development plans with the intent of submitting a report outlining possible future plans for the area. The City of Rosemount currently does not claim jurisdiction over the area and has shown only sporadic interest in past activities on the Site, but is showing increased interest in defining land use preferences now that the remedial activities are nearing completion and the Site becomes desirable for development. To help ensure that future development is consistent with the land-use exposure scenarios used in remedial activities, the University has drafted a set of deed restrictions. The issue of the future of the UMRRC is receiving attention in the

local press (e.g. Minneapolis Star-Tribune and Minnesota Daily (U of M) newspapers).

The general right of way across the Site for 160th Street is currently being reviewed for eventual completion of the road. This area runs east/west and is generally across the middle of the Site, just south of the burn pit area. Completion of this road could increase the number of people who access the area. Negotiations are underway between the county, the University of Minnesota, and other local interests regarding the alignment of the road.

During the height of remedial activities in 1993 and 1994, the University (along with MPCA and MDH) distributed newsletters and fact sheets describing Site work to the public. With the completion of remediation in 1994, the development and distribution of these information tools declined significantly. However, additional local input is warranted now that the administrative portion of the Site work is being completed.

A recent reassessment of PCB toxicity by EPA indicates that for certain PCB congeners and exposure pathways there is somewhat less concern than before. However, the new information also suggests increased concerns for other exposure pathways and congeners (specifically, food-chain and early life exposures, bioaccumulated/persistent or dioxin-like congeners). On balance, EPA concludes that the previously recommended cleanup goals of 1 ppm for residential and 10 - 25 ppm for industrial scenarios remain protective.

In addition, the residential soil cleanup goal for dioxin is currently being reexamined by EPA, with the possibility of lowering the standard from 1 ug/Kg to 0.2 ug/Kg. MPCA has also drafted soil cleanup goals which target 0.2 ug/Kg for dioxin. Currently, it is not clear what impact these new recommendations would have on the Site. Air emissions during remediation were monitored and determined to pose negligible risk. Residues such as ash were required to meet the 1 ug/Kg dioxin standard. By maintaining all permit requirements, optimal conditions were achieved during the incineration, thereby reducing the likelihood of dioxin formation (either in the air or cleaned soil). This, combined with the fact that residues are buried under clean fill in a restricted access area, indicates that health concerns related to dioxins are not likely to be significant at this Site.

The long-term post-closure care for the restricted area will include maintenance of the security fence and vegetative cover to minimize erosion. In addition, the University has agreed to conduct a review of the remedial action 3 years after approval of the final report (i.e. late 1997) to determine effectiveness and consistency with current toxicological literature.

CONCLUSIONS

1) Previous MDH recommendations (May, 1993) regarding soil cleanup and continuing to include the community in Site decision-making have all been successfully accomplished.

2) The UMRRC is located about 15 miles southeast of the Twin Cities metropolitan area and currently consists of around 7500 acres. Past and present activities at the UMRRC include agricultural research, light industry (both service and manufacturing), disposal of wastes generated at the University, storage areas for a variety of concerns (e.g. parking lots for truck driving training school), and a small private airstrip. VOC wastes which were historically disposed of at the Site infiltrated into the soil and underlying groundwater. The VOC contamination remains in the groundwater.

3) Soil contaminated with lead and copper was excavated and transported to an off-site landfill. Soil contaminated with PCBs above 25 ppm was treated on-Site by being excavated and heated in a thermal desorbtion unit to vaporize the PCBs, with the vapors then being destroyed by burning at high temperatures in another chamber of an approved mobile hazardous-waste incinerator. Soils between 10 and 25 ppm PCBs were excavated and consolidated into a fenced, restricted area. An additional effort was made to remove PCB contamination between 1 and 10 ppm. Remedial activities were completed in 1994.

4) While there still are some detectable levels of VOCs, all areas of the groundwater contamination plume on the Site are below their respective Minnesota health based drinking water guidelines. In addition, none of the residential wells in the area had contaminants identified in the water near levels of concern for either individual compounds or when an additivity analysis was conducted. Due to these low concentrations, some reduction in the groundwater monitoring program may be warranted.

5) There are no current complete exposure pathways. Therefore, there are no current public health concerns associated with the Site. However, a potential exposure pathway that could become a concern in the future includes direct contact with soils containing low levels of contaminants by future residents living in currently restricted areas. With the exception of the recommendations listed below, no further public health actions are needed for this Site.

RECOMMENDATIONS

1) Readily enforceable, reasonable, and measured land use restrictions should be developed for areas where trace levels of contaminants remain. This process should include solicitation of the local community and other affected interests to ensure that long-term land use plans are consistent with regional desires and are not likely to be subject to challenge and overturn.

2) A comprehensive review of the groundwater monitoring program should be conducted to identify areas that are no longer supplying pertinent data. For the sake of efficiency, monitoring in these areas could be discontinued. However, some minimal

level of monitoring should be maintained to allow for future reassurance of continuing low concentrations or evaluation of the possible implications of new groundwater standards.

3) Based on the low concentrations of remaining contaminants and the lack of a current complete exposure pathway, no additional public health actions are recommended at this time. In addition, based on Site documents, it does not appear that additional remedial actions are warranted.

DOCUMENTS REVIEWED

Documents reviewed by MDH for the preparation of this SRU include the following:

1. ATSDR. *Public Health Assessment for the University of Minnesota Rosemount Research Center (RRC) NPL Site*. April 10, 1989.
2. ATSDR. *Site Review and Update for the University of Minnesota (Rosemount Research Center)*. May 18, 1993.
3. MPCA, *Minnesota Enforcement Decision Document*. December 4, 1986.
4. Delta Environmental Consultants, *U of M Rosemount Research Center Groundwater Monitoring Results - 1995*. January 11, 1996.
5. Twin Cities Testing, Inc. *Final Remedial Investigation Report for the Rosemount Research Center*. February 26, 1986.
6. International Technology Corporation. *Phase V Groundwater Sampling Report, Rosemount Research Center*. July 13, 1995.
7. MPCA, *Minnesota Permanent List of Priorities*. June, 1995.
8. MDH, Memo from Daniel Symonik to Rosemount Research Center Site file, *Site Visit*, November 14, 1996.
9. Minneapolis Star-Tribune. *Future of "U" land disputed in Rosemount;* November 10, 1996; page B1.
10. The Minnesota Daily. *U mulls uses for rural land.* November 11, 1996; page 1.
11. USEPA, Letter from William Muno, Director of Waste Management Division, to James Warner, MPCA Groundwater and Solid Waste Division Manager. *Concurrence to ROD ESD*. October 1, 1993.
12. IT Corporation. *Response Action Final Report, University of Minnesota Rosemount Research Center, PCB Remediation Site*. August 18, 1994.
13. University of Minnesota. *University of Minnesota Update on Superfund Cleanup, Vol. 6*. February, 1994.
14. IT Corporation. *Interim Final Report, University of Minnesota Rosemount Research Center, PCB Remediation Site*. January 7, 1994.
15. US EPA. *EPA on PCB Carcinogenicity*. Email from Rich Kauffman, ATSDR. November 12, 1996. Originally posted on @epamail.epa.gov on 10/29/96.
16. MDH, Memo from Daniel Symonik to Rosemount Research Center Site file, *Information from Dakota County Environmental Health*, December 16, 1996.
17. Letter from Robert Bohn, local resident, to Dr. Fay Thompson, University of

Minnesota. *RE: University of Minnesota PCB Burning*. February 23, 1993.
18. Letter from Charles Williams, Commissioner MPCA, to Robert Bohn. *RE: University of Minnesota Rosemount Research Center Site Cleanup*. March 9, 1993.

Preparer of this report:

Daniel M. Symonik, Health Assessor
Site Assessment and Consultation Unit

Minnesota Department of Health
Section of Environmental Health Hazard Management

CERTIFICATION

This University of Minnesota Rosemount Research Center Site Site Review And Update was prepared by the Minnesota Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the site review & update was begun.

Richard R. Kauffman, M.S.
Technical Project Officer
State Programs Section (SPS)
Superfund Site Assessment Branch (SSAB)
Division of Health Assessment and Consultation (DHAC)
ATSDR

The Division of Health Assessment and Consultation, ATSDR, has reviewed this site review & update, and concurs with its findings.

Richard E. Gillig, M.C.P.
Chief, SPS, SSAB, DHAC, ATSDR

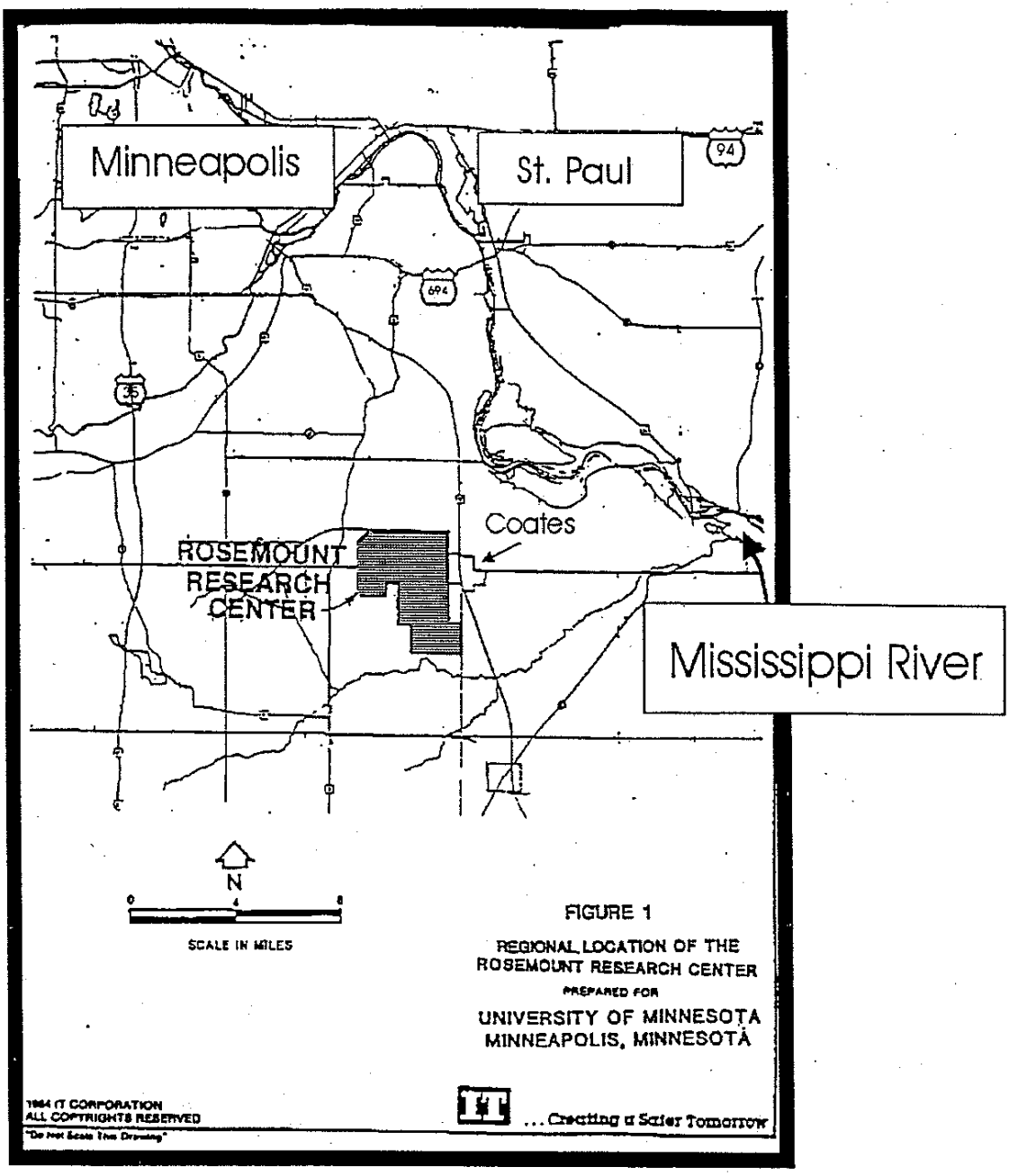

Figure 1: General location
(Based on IT, 1984)

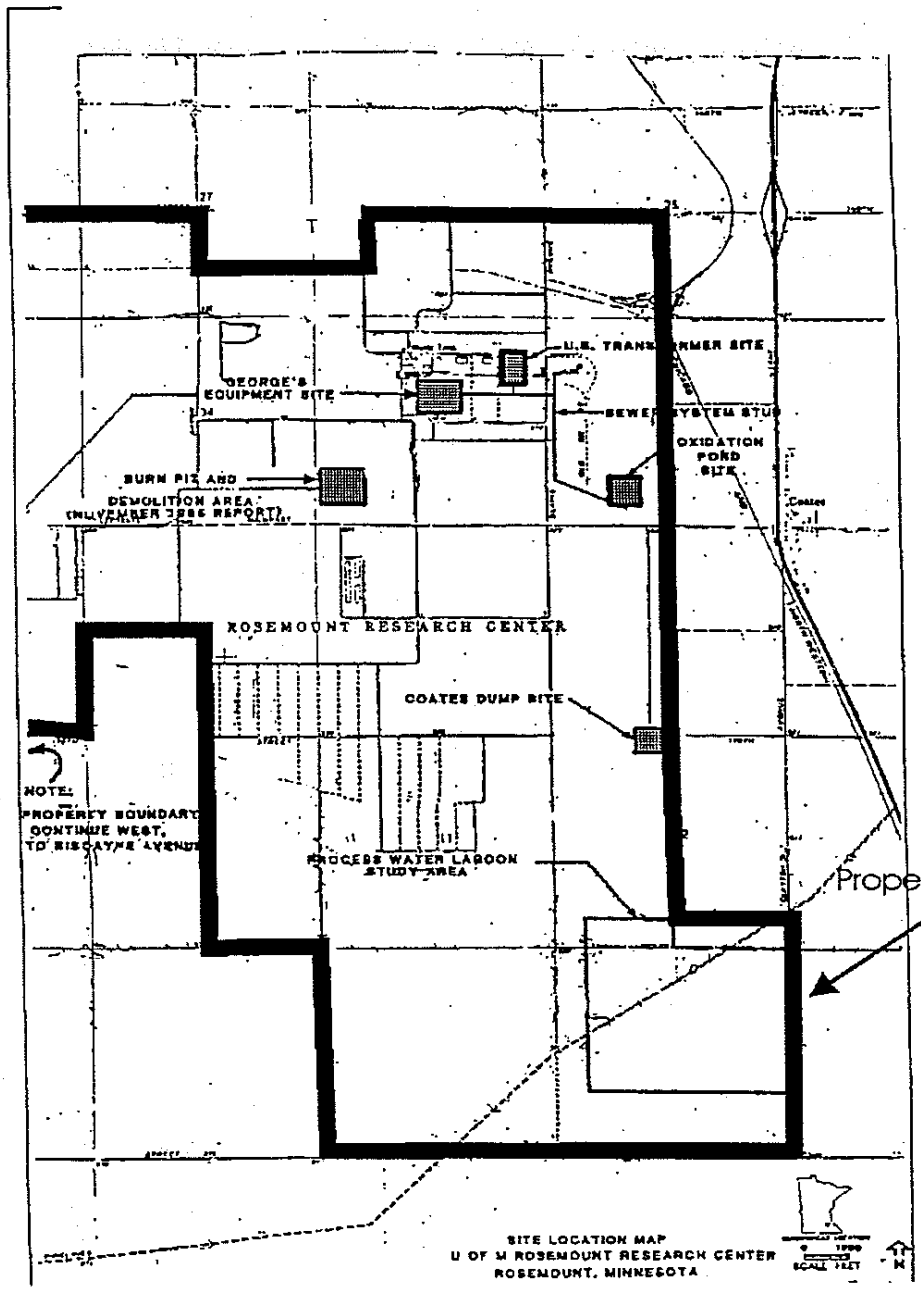

Figure 2: Site-specific Locations

(Based on ATSDR, 1989)