Dump Assessment Study

A report to the Minnesota Legislature on the screening and assessment of Minnesota's 1,800 old dumps

February 2001

Minnesota Pollution Control Agency

Cover photo: Kerrick Dump in Pine County.
Page 1 photo: Randall Dump in Morrison County

Cost of producing 500 copies of this report include:

- Staff time, $8,250
- Printing and Production, $1,750
- Mailing and Distribution, $500

If you are interested in Phase I or II assessments or screening information for specific dumps, contact Gary Krueger, MPCA Policy and Planning Division, (651) 296-6139.

Minnesota Pollution Control Agency

Policy and Planning Division
520 Lafayette Road North
St. Paul, MN 55155
(651) 296-6300
Toll-free/TDD (800) 657-3864
http://www.pca.state.mn.us

Dump Assessment Study

A report to the Minnesota Legislature on the screening and assessment of Minnesota's 1,800 old dumps

February 2001

Prepared by the Minnesota Pollution Control Agency and Minnesota Department of Health

Executive Summary

In 1999, the Minnesota Legislature authorized the Minnesota Pollution Control Agency (MPCA) to use $1 million from the Solid Waste Fund to conduct environmental assessments at old dumps (unpermitted mixed-municipal solid-waste sites). The Omnibus Environmental and Agricultural Budget Bill, Chapter 231, which amended Minnesota Statute 115B.42, contained the appropriation. The MPCA accelerated the study to coincide with the 2001 legislative budget session, instead of reporting in 2002, as originally required.

Minnesota has approximately 1,800 old dumps, based upon previous and current dump inventories. Most dumps are near small towns and communities where people disposed of garbage in the past by dumping it in pits, ravines or wetlands. In most cases, very little was known about the health or environmental impacts of these dumps. This study provides a clearer picture about the health, environmental and economic impacts of old dumps – and what role, if any, the State of Minnesota should play in investigating and reducing risk at old dumps.

The study's main focus was to identify dumps that have the potential for releases of hazardous substances – and a high probability of becoming public health or environmental threats if releases occurred.

The MPCA and Minnesota Department of Health (MDH) conducted a screening process of the approximately 1,800 dumps in the state, consisting of reviewing locations, waste-disposal and land-use information and conducting on-site inspections. This screening effort did not include those dumps that have already been evaluated under the State Superfund Program (i.e. Pigs Eye Landfill, Brooklyn Park Dump) or the MPCA's Voluntary Investigation and Cleanup Program (i.e. Rochester Dump, Stillwater Dump). Nor did it include an evaluation of farm dumps. The screening, which followed appropriate MPCA risk-based guidance, produced 46 dumps that met the criteria, representing possible "worst-case" circumstances – a potential for a hazardous substance release and the likelihood that such a release would cause adverse health or environmental impacts.

The agencies conducted Phase I environmental assessments at the 46 worst-case dumps. The Phase I assessments consisted of:

- Review of available records, files and information about the dump, to determine how it was used and by whom;
- Evaluation of potential human and ecological "receptors" who could be adversely affected by dump contaminants; and
- Determination of potential hazardous substance exposure pathways (ways that contaminants can actually get to receptors).

After reviewing Phase I assessments for the 46 dumps, the MPCA selected 17 for Phase II investigative work, based primarily on risk. Those that appeared to pose the highest potential risk to nearby receptors merited further investigation, in keeping with risk-based decision making used for other types of remediation sites.

The Phase II work focused on collecting analytical data from soil or water samples at the dumps to document if releases of hazardous substances had occurred. In addition, MDH collected samples from drinking water wells (both public and private) located in close proximity to 35 of the 46 dumps, to determine whether dumps under study posed a threat to drinking water supplies.

After completing the Phase I and Phase II investigations, the MPCA found that a high potential for risk exists at four of the dumps at which Phase II assessment work was done. These four dumps are:

- The Fish Hatchery Dump in Ramsey County,
- The Minnesota Valley Landfill in Scott County,
- The Hoeffler Dump in Chisago County, and
- The Hoover Dump in Rice County.

These warrant additional action to determine the extent and magnitude of contamination, evaluate risks associated with the dump, and determine appropriate cleanup actions. The owner/operator should conduct these investigations and enroll in the MPCA's Voluntary Investigation and Cleanup (VIC) Program for oversight. If the owner or operator does not choose to conduct the necessary work, the MPCA intends to use its statutory authority to conduct the necessary investigation to determine the actual risk at these dumps.

Also, MDH has recommended additional monitoring of drinking water wells near two other dumps, the Sunrise Dump in Chisago County and the Vermillion Dump in Dakota County. A Phase II assessment was not done at the Sunrise Dump and may be necessary, depending on MDH monitoring results. Additional action at the Vermillion Dump, by either the owner/operator or MPCA, will also depend on MDH monitoring results.

The MPCA and MDH do not recommend further state investigation at the remaining dumps at which Phase II work has been completed. However, despite their lower potential for risk, these dumps still warrant further attention by the owners or operators. At many of the dumps MPCA and MDH evaluated, during both the Phase I and II parts of the study, physical hazards (scrap metal, for example) could pose a threat to the public. In addition, surface waste material and debris at some dumps had the potential to erode into adjacent surface-water bodies. Phase II results also defined surficial soil contamination at some dumps. These soils could pose a risk of direct exposure to a receptor. A simple solution to concerns about surface exposures at many dumps would be removing debris and waste material at the surface and applying appropriate soil cover. Such actions were required at the time of the dump closure and would not constitute an additional or new regulatory burden.

This study evaluated old dumps based on current land-use conditions. As is true for any dump, a change in land use at or near a dump changes the environmental and human receptors and the potential risk. Plans for development at and near dumps should include appropriate assessments to determine potential risks associated with a change in land use.

Based on the results of this study and other evaluations done by the MPCA and MDH, the agencies conclude that:

- A limited number of dumps currently appear to pose a threat to public health or the environment and warrant additional MPCA or MDH action. Through the screening effort and this dump assessment study, the MPCA has determined that at this time no additional assessment by the MPCA is necessary at more than 1,750 dump sites known by the agency to exist in the State. This is based on current information about each site, the current site conditions and current land use surrounding these dumps.
- A number of old dumps do pose some limited and localized problems, such as contaminated surface soils or exposed scrap material, and are best alleviated by additional cover or other appropriate management practices.
- Risks posed by old dumps collectively are not as high an environmental priority as other air, water and land contamination issues, and therefore are not significant enough to warrant a new or separate cleanup program.

Surface debris covers the Aitkin Dump, one of the study dumps, which is a common problem and a physical hazard at many locations.

Background

During the 1999 State Legislative session, the MPCA requested and was authorized to use as much as $1 million from the Solid Waste Fund to assess old municipal dumps. The Minnesota Legislature's intent in authorizing the study was to determine what impact, if any, old dumps have on the environment and what role the state should play in dump evaluation.

MPCA's initial proposal was to conduct environmental assessments at dumps and report findings to the Legislature by December 2001. The MPCA accelerated the timing of the study to coincide with the 2001 session, which is the budget session for the FY02-03 biennium.

An Open Dump Inventory, completed in 1980, identified 1,800 dumps in Minnesota and was used as a base list for the screening process. In 1985, the Legislative Commission on Minnesota Resources funded the MPCA to do an environmental survey of 15 dumps. In 1998, the MPCA began screening all potentially contaminated sites for which a geographic location was known, including approximately 1,800 labeled as dumps.

Screening Process and Study Site Selection

While file or information review provided important clues about dumps, inspections at each dump provided the most valuable insights. Inspection was a valuable tool in deciding which dumps could pose a risk warranting further MPCA attention. By viewing the dump and its surrounding environment, staff obtained first-hand knowledge of the dump's conditions and nearby land use. Staff could identify potential risks posed by dumps to nearby human or ecological receptors. MPCA also worked closely with county environmental staffs to ascertain local perspectives on potential risk. In some cases, county staff accompanied MPCA during site inspections or conducted inspections and reported findings to the agency.

It must be emphasized that this was a screening effort, rather than an intensive or detailed assessment (such as the Phase I and II assessments conducted on a limited number of dumps). Staff followed established MPCA Site Remediation Risk-Based Guidance in making decisions regarding which dumps required agency follow-up. During the screening process, MPCA staff identified approximately 75 dumps that had the potential to have a release and had a higher potential to pose a risk to public health or the environment. Of these, the MPCA selected 46 that represented the "worst case" dumps to be part of the study.

The decision to conduct assessments at 46 dumps was based on available resources, timeframes for study completion, and statewide geographical distribution. The remaining dumps recommended for further action, but not evaluated during the Dump Assessment Study, will be assessed in the future, based on potential risks and available MPCA resources.

Funding and Staffing the Study

With the $1 million in funding approved by the Minnesota Legislature, the MPCA retained a state contractor, STS Consultants (STS), to plan and complete the Phase I and Phase II assessments on the 46 study dumps. Funding also paid for laboratory analysis of drinking water well samples collected by MDH staff near some of the study dumps. Approximately $850,000 of the $1million appropriated has been used for these purposes.

How many dumps pose a risk?

Dumps in the Study Process | **Dumps Eliminated from the Study**

1,800+

Old dump sites in Minnesota known to the MPCA. Screening included review of MPCA and county information, site inspection, and identification of possible receptors

1,725+

These sites had a lower potential to pose a risk to nearby receptors under current site conditions. Some did have physical hazards.

75

Dumps recommended for further action by the MPCA

29

While these dumps were not among the "worst case" study dumps, a Phase I assessment is advised.

46

Sites selected for the Dump Assessment Study, Phase I, including detailed information search of materials deposited at the dump, ownership history, geologic information for dump area, defining the size of the dump, identification of possible receptors, and assessment of public health risk.

7

These dumps with only Phase I assessments are recommended for additional state action or investigation.

22

These dumps with only Phase I assessments are recommended for no further state action.

17

Dumps requiring a Phase II assessment, which includes installation of soil borings and/or monitoring wells, soil gas surveys, and collection and analysis of environmental and waste samples.

12

Based on the Phase II assessment, the MPCA recommends no further state action on these dumps.

5

Dumps recommended by MPCA or MDH for additional action and investigation.

The Hoeffler Dump in Chisago County

As the $1 million was for contractual purposes only, MPCA staff time was funded by the state Superfund and a cooperative agreement between the U.S. Environmental Protection Agency (EPA) and MPCA for assessment of known or suspected hazardous waste sites in Minnesota. Approximately 3 Full Time Equivalent (FTE) employees were needed for MPCA activities. MDH staff was funded by an appropriation from the Solid Waste Fund.

MPCA worked closely with STS Consultants to prepare site-specific work plans and reports, and reviewed and approved all products. MPCA determined ownership of dumps, arranged for site access for investigations and provided oversight of field sampling activities. Some contractual activities for Phase II assessments also were covered by the cooperative agreement with EPA. Approximately $170,000 in cooperative agreement funds were used in this study. Additional federal funds were used for analysis of samples sent to EPA contract labs. These costs were covered directly by EPA.

MDH Role in the Dump Assessment Study

The MPCA recognized that the MDH would be an important partner in this Dump Assessment Study. MDH has been monitoring drinking water wells near dumps since 1985, first in the Twin Cities metro area, then statewide. MDH was consulted in the planning stages of this study and in the development of Phase I and Phase II guidelines.

MDH staff conducted site visits at all 46 of the study dumps and provided the MPCA with observations relevant to public health. MDH staff also identified drinking water wells close to dumps and selected wells for sampling and analysis. MDH sampled private drinking water wells at 31 of 46 study dumps and public water supply wells near 4 of the study dumps.

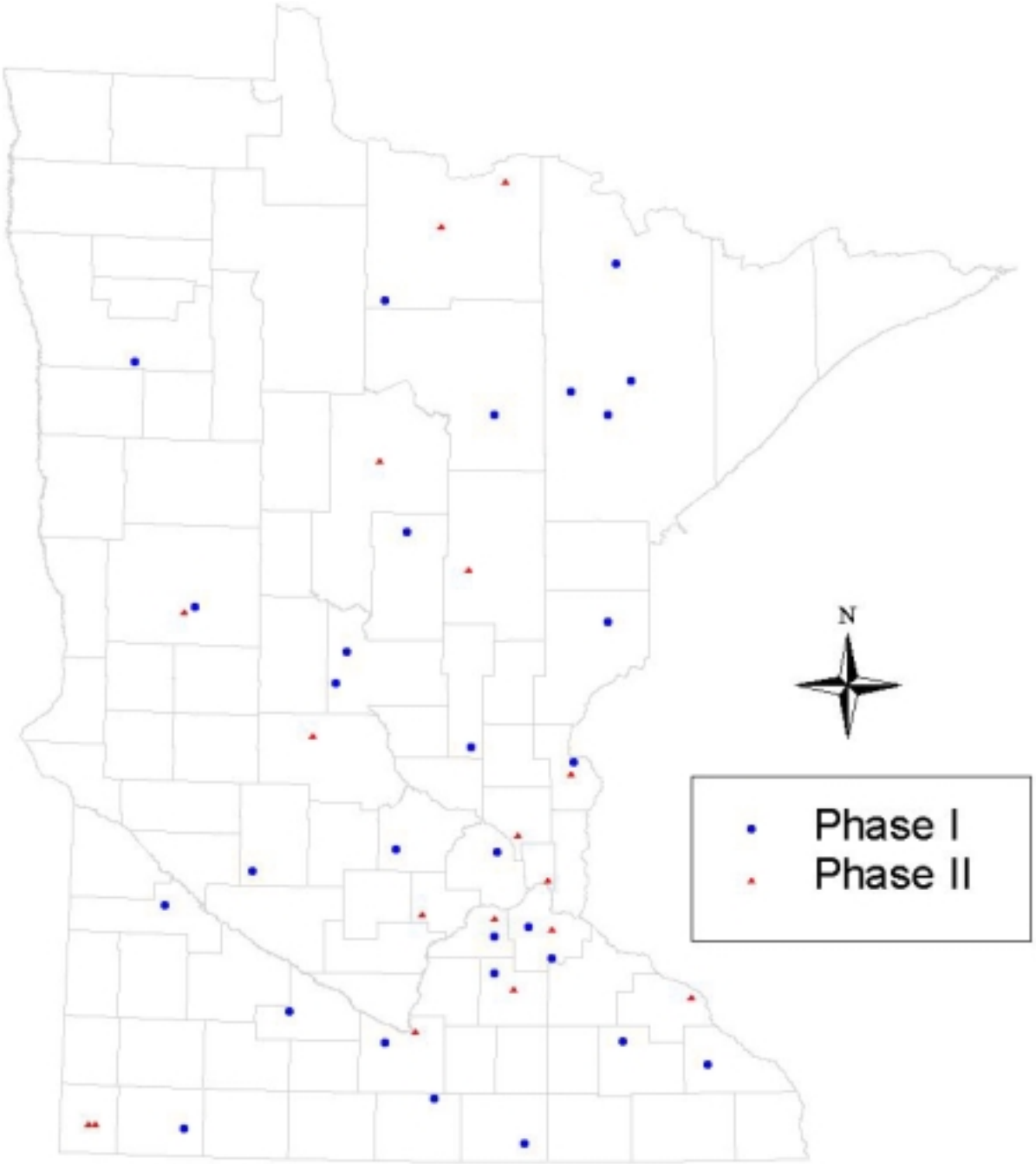
MPCA and MDH staff also met periodically to discuss strategies for effective investigation of the study dumps. MDH staff reviewed and commented on work plans and reports prepared by MPCA's consultant. MDH staff also prepared a description of the role of public health consultation and assessment in the study and will complete public health evaluations for each of the 46 Dump Assessment Study sites.

Dump Assessment Study, Phase I

Phase I environmental assessments were conducted at the 46 study dumps that appeared to pose the highest potential risk to public health or the environment. In conducting Phase I assessments and developing Phase II investigative work plans, MPCA staff followed appropriate MPCA risk-based guidance. Staff also followed guidance developed by the MPCA's Voluntary Investigation and Cleanup (VIC) Program for conducting Phase I and Phase II environmental assessments and for investigating abandoned dumps.

Phase I assessments consist of a detailed search to identify waste materials formerly deposited at the dump by:

- Interviewing site owners or operators,
- Researching property history,
- Gathering geological information,
- Delineating the size of the dump by analyzing geophysical surveys and aerial photos, and
- Using Geographical Information System (GIS) or Global Positioning System (GPS) equipment or software to accurately map the dump.



Dump Assessment Study
Phase I and Phase II
Investigation Locations

An important aspect of the Phase I assessment was gathering accurate data for a given dump site's location. One of the critical factors in determining if a dump poses a potential risk is accurately identifying its location, especially relative to human or ecological receptors. For Phase I activities, STS staff utilized Geographic Information System equipment to better document the location and size of dumps. This level of information, along with a more detailed search of historical activities at the dump, allowed the MPCA and MDH to better determine which study dumps should proceed to a Phase II investigation.

Upon completion of a Phase I assessment for each of the 46 dumps, MPCA, STS and MDH staff reviewed information and decided whether a Phase II assessment was warranted. This decision was based on the type of wastes that appeared to have been deposited at the dump, the likelihood of a release of hazardous substances from those wastes, and the potential for exposure to contamination by receptors. If there appeared to be a higher potential for risk associated with a specific dump, the contractor developed a Phase II sampling plan for MPCA's review and approval. Of the 46 study dumps with completed Phase I assessments, the agencies selected 17 dumps for Phase II investigations.

Dump Assessment Study, Phase II

Phase II assessments consisted of:

- Installation of soil borings to better define site hydrogeology and waste contents,
- Soil gas surveys,
- Installation of monitoring wells and
- Collection of environmental samples for chemical analysis.

Phase II investigations were geared towards ascertaining whether contamination existed or had been released from the dump, what type of wastes were deposited, and if potential exposure pathways were present. Surficial soil samples were collected and analyzed to determine whether direct contact at the dump's surface posed a risk to people or the environment.

Soil and/or waste samples collected within the dump helped identify or confirm what type of wastes had been disposed of in the past. Contractors also collected soil beneath waste materials to determine whether contaminants had migrated deeper into the ground. Ground water, surface water or sediment samples were collected where possible to evaluate whether contaminants had migrated to these environmental media.

Another important component of the Phase II investigation was evaluating whether the dump contents generated methane gas. This would be a primary concern because methane, an odorless and colorless gas created during breakdown of organic waste, has the ability to migrate to nearby enclosed structures and build up to explosive levels.

Figures included in this report illustrate the screening and dump assessment process, the sites evaluated during this study and the locations statewide of dumps involved in the study.

Findings of the Dump Assessment Study

Many dumps in this study pose a simple and obvious public health threat — direct exposure to waste material on or emerging from the dump surface, such as scrap metal, nails,

broken glass, and other physical hazards. At more than half of the 46 study dumps, MPCA identified physical hazards that could pose a threat to somebody walking, biking, snow-mobiling or four-wheeling on or near the dump property. Several other dumps not selected for this study also had physical hazards, but were in remote locations, thus posing a lower potential risk to the public.

MPCA or other study staff found waste material at some dumps adjacent to surface water bodies, with the potential for material to wash or erode into the water.

At most of the 17 dumps evaluated in Phase II, surface soils exhibited contamination with some harmful substance above screening levels used by the MPCA for evaluating risk. These surficial samples were taken in areas of exposed waste material or visually stained soil. Direct exposure to waste or contaminated soil is a threat to people or wildlife that enter the dump property and touch or contact the waste or soil. This is important since many of the 46 study dumps were close to residential or recreational areas and had evidence of human and/or animal activity.

Another area of concern raised during the study is contaminated ground water and the potential threat to nearby drinking water supply wells. During these Phase I and Phase II investigations, MDH was an important participant in the evaluation of potential drinking water threats. Not only did MDH identify and sample drinking water wells potentially threatened by dumps where Phase II investigations were done, they also identified and sampled wells near Phase I study dumps.

For the Dump Assessment Study, MDH identified and sampled 103 private drinking water wells near 31 of the 46 study dumps. At five of these wells, volatile organic compounds (VOCs) were detected, but at levels below current MDH health risk limits (HRLs) for drinking water. It is likely, given the proximity of the contaminated wells to the dumps, that dumps are a source of these VOCs.

MDH also analyzed the drinking water samples for metals, indicators of solid waste leachate, nitrates and, in some cases, pesticides and herbicides. Metals were detected in half of the wells tested, some of which did exceed MDH health risk limits for drinking water. However, it should be noted that metals such as arsenic and manganese are naturally occurring, and in some areas of the state natural occurring levels exceed MDH standards.

Metals such as lead and copper that may be found in drinking water, can be a result of household plumbing construction. This can make it difficult to attribute levels of metals in private drinking water wells to contamination from dumps. Elevated levels of nitrates in wells also can be attributed to septic systems or feedlots. For all wells tested, the well owners were notified of results and advised as to the condition of their drinking water supplies.

At the 17 dumps at which MPCA conducted Phase II assessments, soil and/or ground water samples were collected beneath waste material to help ascertain the migration of contaminants from the dump. Ground water contamination was documented at most of the dumps, sometimes exceeding MDH health risk limits (which are used to assess degradation of ground water quality). However, these sample results pertained to ground water collected from surficial aquifers not commonly used for drinking water. The results helped the MPCA

Where were the study dumps located?

Site	County	MPCA Office
Aitkin Dump *	Aitkin	Duluth
Altura Dump	Winona	Rochester
Battle Lake Dump *	Otter Tail	Detroit Lakes
Big Falls Dump *	Koochiching	Duluth
Clarkfield Dump	Yellow Medicine	Willmar
Clemens C. Hines Dump *	Wabasha	Rochester
Clemmer Dump	Scott	Metro
Clitherall Dump	Otter Tail	Detroit Lakes
Emily City Dump	Crow Wing	Brainerd
Fertile Dump	Polk	Detroit Lakes
Fish Hatchery Dump *	Ramsey	Metro
Hendascran/Gallagher's Dump *	Anoka	Metro
Hatting Street Dump *	Rock	Willmar
Hoeffler Dump *	Chisago	Metro
Hoover Dump *	Rice	Rochester
Kapperman Dump *	Rock	Willmar
Kerrick Dump	Pine	Brainerd
Kitzville Dump	Saint Louis	Duluth
Klugow Dump	Wright	Metro
Lake Crystal Dump	Blue Earth	Rochester
LaVelle Dump	Saint Louis	Duluth
Lonsdale Dump	Rice	Rochester
Melrose Dump *	Stearns	Brainerd
Minnesota Lake Village Dump	Faribault	Rochester
Minnesota Valley Landfill*	Scott	Metro
Mountain Iron Dump	Saint Louis	Duluth
Myrtle Village Dump	Freeborn	Rochester
North Mankato Dump *	Nicollet	Rochester
Northome Dump	Koochiching	Duluth
Norwood-Young America Dump *	Carver	Metro
Oronoco Dump	Olmstead	Rochester
Portage Dump	Saint Louis	Duluth
Princeton Dump	Mille Lacs	Brainerd
Prinsburg Dump	Kandiyohi	Willmar
Randall Dump	Morrison	Brainerd
Randolph Dump	Dakota	Metro
Robbinsdale Dump	Hennepin	Metro
Rosemount Dump	Dakota	Metro
Schaap Dump	Nobles	Willmar
Schumacher Dump	Brown	Rochester
South International Falls Dump *	Koochiching	Duluth
Sunrise Dump	Chisago	Metro
Swanville Dump	Morrison	Brainerd
U.S. Steel Dump #2	Itasca	Duluth
Vermillion Dump *	Dakota	Metro
Walker Dump *	Cass	Brainerd

All Sites had Phase I completed
*** - Sites with Phase II Field Work**

and MDH to better identify potential threats to nearby drinking water supply wells.

Soil and waste sampling results also gave the MPCA and MDH a better understanding of the type of wastes that had been disposed of. While all of the 46 study dumps contained residential or municipal wastes, more than half also had industrial wastes.

Analysis for methane gas at each of the Phase II dumps was also done during installation of soil borings or monitoring wells. Methane was detected at 5 of the 17 Phase II dumps. This indicates that there is still the potential for significant methane levels to be generated at old dumps, even those 30 or 40 years old.

Surface water or sediment samples were collected at 9 of the Phase II dumps where the MPCA suspected the potential for ecological impacts. Surface water or sediment contamination was detected at 6 of the 9 Phase II dumps, at levels above MPCA's screening criteria for potential ecological risk.

Analysis of Dump Study Results

MPCA and MDH staff reviewed the information collected over the course of the year-long study, employed MPCA risk-based guidance, and recommended that additional investigative work should be done at four of the 17 dumps that received Phase II assessments. This additional investigative work should be undertaken by the MPCA or the owner/operator of the dump. Those four dumps are the Fish Hatchery Dump in Ramsey County, the Minnesota Valley Landfill in Scott County, the Hoeffler Dump in Chisago County and the Hoover Dump in Rice County.

Additional monitoring of drinking water supply wells will be done by MDH near the Hoeffler and Hoover Dumps. MDH also plans continued monitoring of drinking water wells near the Sunrise Dump in Chisago County and the Vermillion Dump in Dakota County. Depending on the monitoring results at these two dumps, additional MPCA investigation may be warranted.

At the remaining Phase II dumps, while some soil, ground water or surface water contamination exists, the levels of contamination or the apparent risk are not significant enough to warrant further MPCA action, at this time. This is because:

- The potential for ground water contamination to affect nearby drinking water supplies is remote, based on the hydrology in the area of the dump and the type and levels of contaminants.
- Surficial soils may be contaminated, but these "hot spots" are apparent on observation and usually make up a very small portion of the total dump property.
- Exposed waste material may present more of a physical hazard than a contamination issue.

These surface issues at dumps could be remedied by the owner or operator of the dump by applying additional cover to the dump, removal of waste material or debris, and vegetating the site to prevent erosion.

Land use surrounding a dump may change, thereby changing the potential risk associated with the dump. In these cases, additional investigation or cleanup may be warranted, depending on the planned land use. This is true not just for the 46 study dumps, but also for other dumps that exist in the State.

Site-specific Phase I and Phase II reports are on file at the MPCA. The MPCA will provide copies of these reports to dump owners and operators, along with site-specific MPCA recommendations regarding future action at these dumps. The MPCA also intends to share the information obtained from this study and the dump screening effort with county environmental staff. Public health evaluations conducted by MDH will be available to these staff as well.

Broader Implications of the Dump Assessment Study

Throughout the study, decisions on whether additional MPCA or MDH action was warranted at any specific dump site depended on the potential threat to nearby receptors. Of the 46 "worst case" dumps assessed, only four require more intensive investigation or (potentially) remediation and only two require further MDH drinking water well monitoring.

Decisions made in the course of this study were based on available information and current land use in the vicinity of a dump site. If development encroaches on dumps, whether it is residential, commercial, industrial or recreational, precautions should be taken by developers or purchasers of property to assure that they do not cause releases or increase risks for which they may later be held liable.

Sellers of property also have a responsibility to disclose whether contamination exists on a property for sale. Whether or not recording the existence of a dump site in the property records is required, incorporating locations of dumps into the local planning and zoning processes can assist buyers and sellers in decision-making processes having to do with dumps.

Awareness of these dump locations can also assist in the installation of new private drinking water wells. MDH requires a 150-foot separation distance between a new well and buried waste, and proper disclosure of dumps can prevent both contamination of new water supplies or the cost of re-siting a well.

The MPCA Voluntary Investigation and Cleanup (VIC) Program can provide technical assistance, liability assurances and approval of cleanup plans to parties who enroll. These services can be provided to private, as well as public, agencies and entities.

The VIC Program has developed guidance for conducting Phase I and Phase II environmental assessments and developing cleanup plans for old dumps. These documents, along with the MPCA risk-based cleanup approach, provide guidelines for appropriate risk-management activities at dumps. Using a risk-management approach can prevent the expensive and sometimes unnecessary process of completely digging up a dump and moving it to a permitted, controlled landfill.

To date, over 100 dump sites have been or are being evaluated by owner/operators or developers through the VIC Program. These include investigations and/or cleanup of dumps in Rochester, Stillwater, Duluth, and Tower.

Under Superfund, the primary responsibility for the investigation and cleanup of contaminated sites (including old dumps) has been the owner or operator of the site, or waste generators. At dumps, the owner/operator was often the local unit of government. If responsible parties are not able to conduct investigations or cleanup (either because of the scope of the problem or fiscal limitations), the MPCA can access state Superfund dollars or

propose sites for the federal Superfund program.

Prior to this Dump Assessment Study, the MPCA had conducted environmental assessments at over 50 unpermitted dump sites throughout Minnesota, utilizing either State or Federal Superfund resources. Fifteen dumps have been listed on the State's Permanent List of Priorities (PLP) or State Superfund List since 1984. Only one dump site, the Windom Dump, was listed on the Federal National Priorities Superfund List (NPL). This dump has been delisted from the NPL and the PLP.

Even though the Superfund process can take time, involving responsible parties and local government in the investigation and cleanup of municipal dumps can achieve results. Almost half of the 15 dumps ever listed on the PLP have been delisted because they no longer posed a health or environmental risk.

There are currently eight municipal dumps on the state Superfund list and at most of these dumps, local units of government and/or responsible parties have entered into agreements or are voluntarily investigating and cleaning up the dump. Those dump sites still listed on the PLP include the Pig's Eye Dump in St. Paul, the Brooklyn Park Dump, the Brainerd Former City Dump, Former Duluth Dump #1, the Stillwater City Dump, the Pine Street Dump in Hastings, the Former Elysian City Dump and the Bassett Creek/Irving Avenue Dump in Minneapolis.

The use of "orphan share" funding from the state Superfund account can also assist in the cleanup of old municipal dumps. This orphan share funding was designed to help accelerate the cleanup process by providing a state share in funding cleanups as an incentive to responsible parties to complete the necessary cleanup actions without resorting to litigation against other less viable responsible parties. One such example of the use of orphan share funding is being used is at the Pig's Eye Dump. Two million dollars of orphan share funding from the State Superfund account has been dedicated to assist in the cleanup of the Pig's Eye Dump. Also, over $1 million of additional State and Federal Superfund money has been used at Pig's Eye to conduct investigations and do emergency cleanup at the site. In essence, the use of orphan share funding might be considered to be defraying the societal cost for the cleanup of a dump.

MDH staff also can assist the MPCA or any interested party in evaluating public health risks at contaminated sites. MDH staff can review data, evaluate exposure routes, review potential health impacts and recommend actions to reduce public health risks associated with contaminated sites, including dumps.

Since MDH's well-monitoring program started in 1985, almost 1,600 drinking water wells located in close proximity to 160 dumps have been sampled, primarily for Volatile Organic Compounds (VOCs). Over that time period, VOCs were detected in samples collected from 132 wells, with samples from 13 of those wells exceeding MDH drinking water standards. However, as at the Dump Assessment Study sites, it was not always clear that the nearby dump site was the source of contamination, as there often were other potential sources, especially in urban areas.

In addition, Solid Waste Funding may be available for dump assessment. While the MPCA planned to use the Minnesota Legislature's one-time appropriation of $1 million for dump assessments, the Minnesota

Department of Finance recently determined that this funding may be part of the MPCA's base budget. Should the state Legislature approve continued funding, assistance could be provided to local units of government in the assessment of dumps that are planned for public redevelopment.

Conclusions

During a screening effort of more than 1,800 dumps, the MPCA determined that approximately 75 dumps required further attention by the agency. While the MPCA does not intend to conduct additional environmental assessments at the remaining 1,700 plus dumps at this time, new information about any dump site will be reviewed to determine appropriate MPCA action.

Forty-six dumps, located throughout the state, were selected for the Dump Assessment Study, based on high potential for risk, and available resources. A Phase I Environmental Assessment was completed at each of these 46 sites, and 17 were assessed as requiring Phase II assessment. Phase I and II environmental assessments were completed in accordance with VIC Program and MPCA Site Remediation risk-based guidance.

Out of these 17 dumps undergoing Phase II assessment, four have been recommended for further action by the MPCA. These four dumps are the Fish Hatchery Dump, the Minnesota Valley Landfill, the Hoeffler Dump and the Hoover Dump. Two additional dumps, the Sunrise Dump and Vermillion Dump, have been recommended for continued MDH monitoring. A Phase II assessment was not done at the Sunrise Dump and may be necessary, depending on MDH monitoring results.

The recommendation that the remaining dumps which had Phase II investigations not proceed with additional MPCA or MDH action should not be construed to mean those sites are clean or free of contamination. Contamination exists at a number of Phase II dumps, but the risk posed to public health or the environment does not warrant additional action by the MPCA, at this time.

The risks at these dumps appear to be local and should be addressed by the owners or operator of the dump. Additional Phase II assessment by the MPCA appears warranted at 6 of the 29 dumps that had only a Phase I assessment. These sites are the Kerrick Dump in Pine County, the Altura Dump in Winona County, the Oronoco Dump in Olmsted County, the Lake Crystal Dump in Blue Earth County, the Schaap Dump in Nobles County and the Myrtle Dump in Freeborn County. The MPCA intends to utilize remaining funds from the $1 million appropriation to conduct as many Phase I or Phase II assessments as possible prior to the end of this state biennium.

Site-specific recommendations are based on the current status of the dump and the current surrounding land use. Should those land-use conditions change, the potential risk the site poses also changes. If there are development plans around dumps, whether for residential, industrial, commercial or recreational purposes, the project proponent should conduct an appropriate investigation of the dump and seek assistance through the MPCA's VIC Program.

It is difficult to estimate the number of additional dumps statewide that have not yet been discovered or identified – especially those that could pose a significant risk which would

warrant additional MPCA action. Hazardous substances are likely to be present at most dumps, however the potential for human and environment exposure to contamination appears to be low.

This study and the screening process used a risk-based decision making process in an attempt to identify "worst case" sites. The number of dumps that the MPCA recommended for further action made up less than 5 percent of the total 1,800 dumps evaluated. (Again, an important factor in this decision making process was current land use around the dump, rather than proposed land use).

Since MDH began monitoring drinking water supply wells in 1985, almost 10 percent of the wells sampled near dumps were discovered to be contaminated. However, most of the contaminants detected were found at levels below health risk limits for drinking water (only one percent were contaminated above drinking water standards).

While the Superfund Program and process can seem cumbersome, it does provide a safety net for communities near those dumps in which local entities and/or responsible parties are unable or unwilling to conduct necessary investigations or cleanup. The use of risk-based guidance and the potential for orphan share funding can help the state, local units of government and/or responsible parties work cooperatively to address environmental issues at dumps.

Based on this study and other evaluations done by the MPCA and MDH, most dumps appear to pose a low potential risk to public health and the environment. These risks do not warrant additional MPCA action, given existing resources and other identified agency priorities. However, there will be isolated cases in which the MPCA will need to respond by investigating and potentially remediating a dump. This can be accomplished under mechanisms that are already in place to address the investigation and/or cleanup of contaminated sites.

Recommendations

1. Because most dumps appear to pose a low potential risk to public health and the environment, and given other MPCA priorities and available resources, the MPCA is not recommending a new state program targeted at dumps. Further, the MPCA believes current mechanisms to assess, investigate and clean up contaminated sites are sufficient to manage the number and potential risks of Minnesota's dumps. At the MPCA, the Superfund and VIC programs can serve as a safety net. The MPCA will assist owners and developers of dumps through existing state remediation programs.

2. The MPCA recommends that for environmental reasons, owners leave dump sites as open, undeveloped spaces in their naturally vegetated states.

3. Developers, public and private, can undertake responsible development in the vicinity of dumps, but should work with the VIC program (and the Metropolitan Council and Department of Trade and Economic Development Brownfields programs, if appropriate to the circumstances) to assure that proposals are realistic for site conditions, will not create a risk where none previously existed, and will follow designs to minimize risks already present.

Developers are responsible to be aware of dump locations and disclosing locations to potential buyers.

4. As another safety net, the MPCA is consulting with the Legislature about the usefulness of continuing to appropriate $1 million from the Solid Waste Fund each biennium for environmental assessments at dumps.

   If approved, half of this money would be available to local governments through DTED to help offset the costs of assessing dumps that are planned for redevelopment. Assistance also could be provided by the MPCA to local units of government in the assessment of dumps that are planned for redevelopment for public purposes.

5. Owners or former operators of old dumps should properly close and maintain the dumps as specified in MPCA-prepared Best Management Practices for old dumps. Owners can limit future liability by removing surface debris and waste material, applying appropriate cover material, controlling dump public access, and prohibiting illegal disposal of wastes.

   Sellers of properties that contain dumps need to disclose the dumps' existence to potential purchasers. Owners of property at which a contaminant release is documented are also required to report those releases to the MPCA. The MPCA will make available Best Management Practices to assist local units of government in closure, maintenance and management of old dumps.

6. Local governments should develop means to identify dumps early in development, planning or zoning processes. The unanticipated discovery of a dump during a time-critical construction project can result in delays, increased costs, inadequate environmental controls and workplace exposures to contaminants. MPCA will share geographic information on all known dumps with the appropriate local governments, and will update this location information when necessary.

7. Potential buyers of land should have access to accurate information about potential dumps on land they intend to buy. The MPCA should develop a system of making free access available to old dump geographic information through the World Wide Web.

8. Drinking water supplies need to be monitored and protected. The MPCA will continue to support the Minnesota Department of Health's work in monitoring former dumps, with biennial appropriations from the Solid Waste Fund.

Owners of former dump property often have a difficult time preventing illegal dumping. Implementing access restrictions and other best management practices can help stop the continuing problem of surface debris at dumps,

Notes

The Minnesota Pollution Control Agency's mission is to help Minnesotans protect the environment.

This report is printed on paper with 100 percent postconsumer waste.

This report can be made available in other formats, such as Braille, large type or audiotape, upon request.

Minnesota Pollution Control Agency
Policy and Planning Division
520 Lafayette Road North
St. Paul, MN 55155
(651) 296-6300
Toll-free/TDD (800) 657-3864
http://www.pca.state.mn.us