

PERFORMANCE AUDIT
OF
SOURCE REDUCTION AND RECYCLING ACTIVITIES
DEPARTMENT OF ENVIRONMENTAL QUALITY

February 2002

EXECUTIVE DIGEST

SOURCE REDUCTION AND RECYCLING ACTIVITIES

INTRODUCTION	This report, issued in February 2002, contains the results of our performance audit* of Source Reduction* and Recycling* Activities, Department of Environmental Quality (DEQ).
AUDIT PURPOSE	This performance audit was conducted as part of the constitutional responsibility of the Office of the Auditor General. Performance audits are conducted on a priority basis related to the potential for improving effectiveness* and efficiency*.
BACKGROUND	DEQ's stated mission* is: . . . to drive improvements in environmental quality for the protection of public health and natural resources to benefit current and future generations. This will be accomplished through effective administration of agency programs, providing for the use of innovative strategies, while helping to foster a strong and sustainable economy. DEQ's source reduction and recycling activities are primarily identified within two parts of the <i>Michigan Compiled Laws</i> . Sections 324.14301 - 324.14306 (Waste Minimization) mandate DEQ to incorporate pollution prevention* goals* within its regulatory and permit

* See glossary at end of report for definition.

programs, including data collection and analysis to advance the concept and implementation of pollution prevention. Sections 324.14501 - 324.14513 (Waste Reduction Assistance) direct DEQ to inform, assist, educate, and provide funding for facilitating a reduction in the amount of environmental waste generated in the State. DEQ's pollution prevention activities pursue an in-plant emphasis, which is specifically identified in both these parts of the *Michigan Compiled Laws*. DEQ's solid waste management activities are primarily identified in Sections 324.11501 - 324.11550 of the *Michigan Compiled Laws*.

The State has defined source reduction as the philosophy or practice of not creating or generating waste materials by increasing efficiency, substituting materials, or changing processes so that fewer waste materials are produced. DEQ has interpreted pollution prevention to be the voluntary, multi-media approach of finding ways to eliminate or reduce the generation of waste at its source or to recycle those wastes that cannot be eliminated.

AUDIT OBJECTIVES,
CONCLUSIONS, AND
NOTEWORTHY
ACCOMPLISHMENTS

Audit Objective: To assess the effectiveness of DEQ's efforts to facilitate reduction in the generation of waste.

Conclusion: We concluded that, although DEQ had effectively implemented those requirements specifically established by statute, there was no measurable basis available to assess the outcomes of DEQ's waste generation reduction programs. Our assessment disclosed one reportable condition* related to program effectiveness (Finding 1).

Noteworthy Accomplishments: The Michigan Pulp and Paper Pollution Prevention Program, which is a partnership between DEQ's Environmental Assistance

* See glossary at end of report for definition.

Division and the Michigan Pulp and Paper Environmental Council, was the recipient of the National Pollution Prevention Roundtable's Most Valuable Pollution Prevention Award for 2000. The Program was chosen for its innovation, measurable results, transferability, level of commitment from the parent organization, and optimization of available resources.

Audit Objective: To assess the effectiveness of DEQ's efforts to facilitate the recycling of waste materials.

Conclusion: DEQ was generally effective in its efforts to facilitate the recycling of industrial waste materials but could improve overall program effectiveness by extending its efforts to facilitate the recycling of residential waste materials. Our assessment disclosed one reportable condition related to a Statewide recycling program (Finding 2).

**AUDIT SCOPE AND
METHODOLOGY**

Our audit scope was to examine the program and other records related to the Department of Environmental Quality's source reduction and recycling activities focusing on the Environmental Assistance Division's Pollution Prevention Strategy and the Waste Management Division's Solid Waste Regulatory Program. Our audit was conducted in accordance with *Government Auditing Standards* issued by the Comptroller General of the United States and, accordingly, included such tests of the records and such other auditing procedures as we considered necessary in the circumstances.

We examined the program and other records for the period October 1, 1997 through May 31, 2001. Our audit procedures included a preliminary survey to obtain an understanding of DEQ's source reduction and recycling activities.

To accomplish our audit objectives, we interviewed key DEQ personnel directly involved with administering and/or operating DEQ's pollution prevention, waste management, and recycling efforts. Also, we interviewed officials from local governments, nonprofit organizations, and private enterprises involved with waste management and recycling.

We obtained and reviewed State statutes, administrative rules, and program descriptions. We obtained other states' audit reports and national publications from the Internet and the Library of Michigan databases.

We obtained and reviewed pollution prevention, waste management, and recycling program reports from DEQ's Environmental Assistance and Waste Management Divisions that described the history, purpose, activities, and targeted participants.

AGENCY RESPONSES

Our audit report contains 2 findings and 2 corresponding recommendations. DEQ's preliminary response indicated that it partially agrees with 1 recommendation and disagrees with 1 recommendation.

February 26, 2002

Mr. Russell J. Harding, Director
Department of Environmental Quality
Hollister Building
Lansing, Michigan

Dear Mr. Harding:

This is our report on the performance audit of Source Reduction and Recycling Activities, Department of Environmental Quality.

This report contains our executive digest; description of agency; audit objectives, scope, and methodology and agency responses; comments, findings, recommendations, and agency preliminary responses; and a glossary of acronyms and terms.

Our comments, findings, and recommendations are organized by audit objective. The agency preliminary responses were taken from the agency's responses subsequent to our audit fieldwork. The *Michigan Compiled Laws* and administrative procedures require that the audited agency develop a formal response within 60 days after release of the audit report.

We appreciate the courtesy and cooperation extended to us during this audit.

AUDITOR GENERAL

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Description of Agency

The Department of Environmental Quality's (DEQ's) stated mission is:

. . . to drive improvements in environmental quality for the protection of public health and natural resources to benefit current and future generations. This will be accomplished through effective administration of agency programs, providing for the use of innovative strategies, while helping to foster a strong and sustainable economy.

DEQ's source reduction and recycling activities are primarily identified within two parts of the *Michigan Compiled Laws*. Sections 324.14301 - 324.14306 (Waste Minimization) mandate DEQ to incorporate pollution prevention goals within its regulatory and permit programs, including data collection and analysis to advance the concept and implementation of pollution prevention. Sections 324.14501 - 324.14513 (Waste Reduction Assistance) direct DEQ to inform, assist, educate, and provide funding for facilitating a reduction in the amount of environmental waste generated in the State. DEQ's pollution prevention activities pursue an in-plant emphasis, which is specifically identified in both these parts of the *Michigan Compiled Laws*. DEQ's solid waste management activities are primarily identified in Sections 324.11501 - 324.11550 of the *Michigan Compiled Laws*.

The State has defined source reduction as the philosophy or practice of not creating or generating waste materials by increasing efficiency, substituting materials, or changing processes so that fewer waste materials are produced. The U.S. Environmental Protection Agency has stated that source reduction involves altering the design, manufacture, or use of products and materials to reduce the amount and toxicity of what gets thrown away. DEQ has interpreted pollution prevention to be the voluntary, multi-media approach of finding ways to eliminate or reduce the generation of waste at its source or to recycle those wastes that cannot be eliminated.

Primarily two DEQ divisions perform functions impacting source reduction and recycling activities. The Environmental Assistance Division is the primary administrator of DEQ's pollution prevention efforts. Through its Pollution Prevention Section, the Environmental Assistance Division operates 18 pollution prevention programs. These programs are divided into two types: pollution prevention assistance programs and pollution prevention partnership programs. The assistance programs are operated entirely by the

State. The partnership programs are operated and supported by other parties in addition to the State. The focus of all these programs is to reduce the generation of waste. The targeted users of these programs vary depending on the specific pollution prevention program.

The Waste Management Division is the administrator of the Solid Waste Regulatory Program, which includes administration of the construction permit and operating license program for municipal and industrial nonhazardous solid waste disposal facilities, including landfills, transfer stations, and processing plants; county solid waste management planning; and regulation of scrap tire collection sites and haulers. In addition, the Waste Management Division administers the scrap tire clean-up grant program and provides project oversight for the Solid Waste Alternative Program grant and loan projects awarded under the Environmental Protection Bond Program.

Audit Objectives, Scope, and Methodology and Agency Responses

Audit Objectives

Our performance audit of Source Reduction and Recycling Activities, Department of Environmental Quality (DEQ), had the following objectives:

1. To assess the effectiveness of DEQ's efforts to facilitate reduction in the generation of waste.
2. To assess the effectiveness of DEQ's efforts to facilitate the recycling of waste materials.

Audit Scope

Our audit scope was to examine the program and other records related to the Department of Environmental Quality's source reduction and recycling activities focusing on the Environmental Assistance Division's Pollution Prevention Strategy and the Waste Management Division's Solid Waste Regulatory Program. Our audit was conducted in accordance with *Government Auditing Standards* issued by the Comptroller General of the United States and, accordingly, included such tests of the records and such other auditing procedures as we considered necessary in the circumstances.

Audit Methodology

We examined the program and other records for the period October 1, 1997 through May 31, 2001. Our audit procedures, which were performed between November 27, 2000 and June 29, 2001, included a preliminary survey to obtain an understanding of DEQ's source reduction and recycling activities.

To accomplish our audit objectives, we interviewed key DEQ personnel directly involved with administering and/or operating DEQ's pollution prevention, waste management, and recycling efforts. Also, we interviewed officials from local governments, nonprofit organizations, and private enterprises involved with waste management and recycling.

We obtained and reviewed State statutes, administrative rules, and program descriptions. We obtained other states' audit reports and national publications from the Internet and the Library of Michigan databases.

We obtained and reviewed pollution prevention, waste management, and recycling program reports from DEQ's Environmental Assistance and Waste Management Divisions that described the history, purpose, activities, and targeted participants.

Agency Responses

Our audit report contains 2 findings and 2 corresponding recommendations. DEQ's preliminary response indicated that it partially agrees with 1 recommendation and disagrees with 1 recommendation.

The agency preliminary response that follows each recommendation in our report was taken from the agency's written comments and oral discussion subsequent to our audit fieldwork. Section 18.1462 of the *Michigan Compiled Laws* and Department of Management and Budget Administrative Guide procedure 1280.02 require DEQ to develop a formal response to our audit findings and recommendations within 60 days after release of the audit report.

COMMENTS, FINDINGS, RECOMMENDATIONS, AND AGENCY PRELIMINARY RESPONSES

EFFECTIVENESS OF REDUCING THE GENERATION OF WASTE

COMMENT

Audit Objective: To assess the effectiveness of the Department of Environmental Quality's (DEQ's) efforts to facilitate reduction in the generation of waste.

Conclusion: We concluded that, although DEQ had effectively implemented those requirements specifically established by statute, there was no measurable basis available to assess the outcomes of DEQ's waste generation reduction programs. Our assessment disclosed one reportable condition related to program effectiveness.

Noteworthy Accomplishments: The Michigan Pulp and Paper Pollution Prevention Program, which is a partnership between DEQ's Environmental Assistance Division and the Michigan Pulp and Paper Environmental Council, was the recipient of the National Pollution Prevention Roundtable's Most Valuable Pollution Prevention Award for 2000. The Program was chosen for its innovation, measurable results, transferability, level of commitment from the parent organization, and optimization of available resources.

FINDING

1. Program Effectiveness

DEQ had not fully developed a performance assessment methodology by which DEQ management or the Legislature could assess the effectiveness of DEQ's efforts to facilitate source reduction activities.

To assess program effectiveness, performance standards* and goals are needed to describe the desired level of outcomes*. Also, a management information system is required to gather accurate performance data, to compare performance data with desired outcomes, to report the comparison results to management, and

* See glossary at end of report for definition.

to propose program changes for improving the effectiveness of the program. DEQ has used portions of such an assessment process to help manage its activities. For example, DEQ monitored performance data related to the number of program participants, number of requests for program information, and number of case studies prepared. Also, DEQ has stated that it uses a departmentwide system of targets, means, and measures for setting program expectations.

We focused our evaluation on DEQ's pollution prevention and solid waste programs:

- a. Based on program reports provided to us, the availability of information needed to assess pollution prevention program effectiveness varied widely by each program.

DEQ operates 18 pollution prevention programs. These programs are divided into two types: pollution prevention assistance programs and pollution prevention partnership programs. The assistance programs are operated entirely by the State. The partnership programs are operated and supported by other parties in addition to the State. The focus of all these programs is to reduce the generation of waste. The targeted users of these programs vary depending on the specific pollution prevention program.

We reviewed two assistance programs (Retired Engineers Technical Assistance Program and Small Business Pollution Prevention Loan Program) and four partnership programs (Agricultural Pollution Prevention Project, Michigan Automotive Project, The Michigan Great Printers Project, and Michigan Pulp and Paper Pollution Prevention Program). The purposes of our review were to obtain an understanding of these programs and their missions and goals and to evaluate how management assesses the effectiveness of these programs. Of the programs that we reviewed, only one program had a documented mission statement and four programs had written program goals. To measure program performance, DEQ appears to have primarily focused on program outputs* rather than program outcomes.

A more thorough evaluation methodology of program performance would include assessing program outcomes for all pollution prevention programs. Such program outcomes could include identifying the reduction of waste generated as a result of program participation.

* See glossary at end of report for definition.

- b. DEQ had not updated Michigan's solid waste policy since May 1988 and had not collected sufficient information on all aspects of the Statewide solid waste stream necessary to evaluate performance.

This policy was adopted by the Michigan Natural Resources Commission, which is no longer the governing body since DEQ's creation. However, the policy's purpose of providing a comprehensive approach to reduce significantly the amount of solid waste currently disposed of in landfills throughout the State and ensuring proper disposal of solid waste that is being placed in landfills remains appropriate today. The policy established goals addressing waste-to-energy, recycling, composting, source reduction, and reuse in five-year increments through 2005.

DEQ had not collected all information related to a Statewide solid waste stream necessary to evaluate the achievement of the policy's goals. For comparison, we obtained statistics based on the U.S. Environmental Protection Agency's (EPA's) national estimates and description of the United States' solid waste stream characterization. These statistics addressed waste generation, recycling, and disposal. When we requested corresponding information for Michigan, DEQ could not provide such information, although DEQ is not mandated to collect such information.

DEQ's inability to produce waste generation, recycling, and disposal information was recently reiterated by a trade publication, which identified Michigan as 1 of 3 states unable to provide any information requested in its 12th annual nationwide survey on solid waste.

The collection of sufficient and reliable information allows management to identify the strengths, weaknesses, and needs of programs and, more importantly, allows management to assess program effectiveness.

RECOMMENDATION

We recommend that DEQ fully develop a performance assessment methodology by which DEQ management and the Legislature can assess the effectiveness of DEQ's efforts to facilitate source reduction activities.

AGENCY PRELIMINARY RESPONSE

DEQ partially agrees with this recommendation. While it agrees that all programs need documented missions and goals, the voluntary nature of pollution prevention and waste reduction programs limits DEQ's ability to collect data. Maintaining the voluntary nature of these programs is critical to their success.

The audit maintains that there is insufficient documentation of the mission and goals of DEQ's pollution prevention programs. DEQ provided the auditors with ample evidence that its programs have mission statements and goals; however, DEQ agrees that these may not always be clear to those outside of DEQ. DEQ will, therefore, review each of its pollution prevention programs, consulting with its partners, and where necessary, clarify program mission statements and goals. This information will be incorporated into information materials and posted on the DEQ web site.

The audit acknowledges that DEQ monitors the performance of its pollution prevention programs, but maintains that DEQ focuses on program outputs instead of program outcomes. In a regulatory program where reporting is required, the outcome reporting is more developed. However, DEQ's pollution prevention programs are voluntary and requiring facilities to provide additional performance data will severely and permanently affect participation, weaken support for these programs, and hamper DEQ's efforts to facilitate source reduction and recycling.

DEQ recognizes that measurements are vital to program assessment, and for each of its pollution prevention programs, DEQ collects certain information from voluntary participants. However, DEQ has strived to balance the collection of information for proper program evaluation with the need to avoid burdensome reporting that will have a chilling effect on facilities' willingness to participate. DEQ agrees that performance assessment is important to program effectiveness, and will continue to identify opportunities for measuring the outcomes provided they do not sacrifice program participation, and the resulting pollution prevention gains.

Relative to performance assessment methodology for the solid waste policy, the current regulatory structure and resources do not provide for the mandatory collection of recycling data. The audit recognizes in the next finding that DEQ did submit, as required by Section 324.11507a(2) of the *Michigan Compiled Laws*, a plan to the Legislature for gathering data on the amount of recycled materials

recovered in the State. No action was taken on that plan. Furthermore, the dispersed nature of waste generation and recycling activities make data collection difficult. Many related statistics from across the country are estimates.

EFFECTIVENESS OF RECYCLING WASTE MATERIALS

COMMENT

Audit Objective: To assess the effectiveness of DEQ's efforts to facilitate the recycling of waste materials.

Conclusion: DEQ was generally effective in its efforts to facilitate the recycling of industrial waste materials but could improve overall program effectiveness by extending its efforts to facilitate the recycling of residential waste materials. Our assessment disclosed one reportable condition related to a Statewide recycling program.

FINDING

2. Statewide Recycling Program

DEQ could extend its efforts to facilitate the Statewide residential recycling of waste materials.

DEQ is not mandated by statute to fund, develop, administer, and/or operate a Statewide residential recycling program. However, DEQ's mission is to drive improvements in environmental quality for the protection of public health and natural resources to benefit current and future generations. In addition, DEQ was mandated by Section 324.11507a(2) of the *Michigan Compiled Laws* to submit a plan to the Legislature by September 1, 1996 for gathering data on the amount of recycled materials recovered in the State. DEQ submitted such a proposal. However, the Legislature did not take specific action on the proposal, and the collection of data was not initiated.

In 1988, the Clean Michigan Communities Grant Program provided funding for six grants to small, medium, and large communities (two grants to each community type) to develop pilot community recycling programs that other communities could use as models. At the time of our audit, DEQ reviewed county waste management

plans for the mandated inclusion of some assessment of the feasibility of the county pursuing recycling activities. Without DEQ's active role in developing a Statewide recycling program, local governments, intergovernmental councils, nonprofit organizations, and private enterprises have assumed the responsibility for developing residential recycling programs. The absence of Statewide recycling leadership is demonstrated by the lack of systematic collection of basic recycling information, of training provided to outside parties, and of direction and implementation guidance to agencies and organizations.

The need for a Statewide, proactive approach to foster recycling programs, businesses, and markets is further illustrated by the lack of a coordinated information gathering approach. The Michigan Recycling Coalition (MRC) estimated that in 1999 the State achieved a municipal solid waste recycling rate of 16%. To obtain this information, MRC initiated a grant proposal and was subsequently awarded funding by the EPA to conduct the first comprehensive study of the State's recycling industry. MRC's study included surveying recycling professionals and interviewing county, local, private, and nonprofit program planners and coordinators. Also, MRC gathered financial information from recycling processors and brokers on the amount of revenues and employment generated by their firms. According to a trade publication's nationwide recycling survey with 43 states responding, the national recycling rate is 33%. For the Great Lakes region (with Michigan and Wisconsin not responding to the survey), the publication calculated a recycling rate of 26%. The EPA has targeted a recycling goal of 35% by 2005.

A report by the Michigan Agricultural Experiment Station, Michigan State University, is more encouraging as it estimates Michigan's 1998 recycling rate at 29%. This estimate was based primarily on the EPA's national estimates of municipal solid waste generation and recycling and on Michigan's landfill reports. However, more significant than these variances in recycling rates is the fact that DEQ did not have information available to identify Michigan's recycling rate.

During our audit, we met with various local governments, nonprofit organizations, and private enterprises involved with recycling. As discussed with these stakeholders, there is a need for leadership, assistance, and guidance with recycling programs. All these stakeholders expressed an interest in the State assuming a proactive leadership role in recycling. The usefulness of DEQ's leadership in collection of basic recycling information would become more apparent

as consistent measures and methods are developed and implemented to meet specific needs and goals. These stakeholders suggested that such information could be used to track progress toward achieving pollution prevention goals; to identify trends in recycling that could impact local, State, or regional planning; and to assist with recyclable materials market development efforts.

The following are examples of some efforts that the State could initiate or expand to support and foster recycling activities:

- a. Broaden DEQ's focus from only industrial to include residential recycling.
- b. Foster the purchase of recycled materials by all State departments and institutions.
- c. Assist in the marketing of recyclable materials.
- d. Facilitate the sharing of recycling knowledge and technology.
- e. Provide assistance on developing and implementing recycling programs.
- f. Conduct a Statewide waste characterization study.
- g. Systematically obtain and compile recycling information.

These efforts would help DEQ in accomplishing its mission to improve environmental quality for the protection of public health and natural resources by helping to ensure that more reusable products are recycled instead of discarded into landfills.

RECOMMENDATION

We recommend that DEQ extend its efforts to facilitate the Statewide residential recycling of waste materials.

AGENCY PRELIMINARY RESPONSE

DEQ disagrees with the audit recommendation that DEQ extend its efforts to facilitate Statewide residential recycling of waste materials. The audit acknowledges that DEQ is not mandated by statute to fund, develop, administer,

and/or operate Statewide residential recycling programs. The handling of residential waste, including recycling, has long been recognized as a responsibility of local government.

The audit acknowledges that under the 1988 Environmental Protection Bond Program, grants to develop and implement six model community recycling programs were issued. The results of these pilots were made available, and remain available, to other communities. The Solid Waste Alternative Program under the 1988 bond also provided funding in support of a number of other efforts discussed in this finding, such as assisting in the marketing of recyclable materials.

DEQ has found that residential recycling is best handled at the local level, since local governments are better able to generate the local citizen support, fund, and implement recycling activities. The most effective approach is to rely on local government and private waste management firms to foster residential recycling. DEQ does require county solid waste plans to include an assessment on the feasibility of recycling.

Glossary of Acronyms and Terms

DEQ	Department of Environmental Quality.
effectiveness	Program success in achieving mission and goals.
efficiency	Achieving the most outputs and outcomes practical for the amount of resources applied or minimizing the amount of resources required to attain a certain level of outputs or outcomes.
EPA	U.S. Environmental Protection Agency.
goals	The agency's intended outcomes or impacts for a program to accomplish its mission.
mission	The agency's main purpose or the reason that the agency was established.
MRC	Michigan Recycling Coalition.
outcomes	The actual impacts of the program. Outcomes should positively impact the purpose for which the program was established.
outputs	The products or services produced by the program. The program assumes that producing its outputs will result in favorable program outcomes.
performance audit	An economy and efficiency audit or a program audit that is designed to provide an independent assessment of the performance of a governmental entity, program, activity, or function to improve public accountability and to facilitate decision making by parties responsible for overseeing or initiating corrective action.

performance standards	A desired level of output or outcome as identified in statutes, regulations, contracts, management goals, industry practices, peer groups, or historical performance.
pollution prevention	Eliminating or minimizing the initial generation of waste at the source or utilizing environmentally sound on-site and off-site reuse or recycling.
recycling	The collection, separation, and recovery of useful materials that would otherwise be discarded as waste for remanufacture into raw materials or new products.
reportable condition	A matter coming to the auditor's attention that, in the auditor's judgment, should be communicated because it represents either an opportunity for improvement or a significant deficiency in management's ability to operate a program in an effective and efficient manner.
source reduction	The philosophy or practice of not creating or generating waste materials by increasing efficiency, substituting materials, or changing processes so that fewer waste materials are produced.