A Summary of Laws, Regulations and Management Practices with Potential to Affect Michigan Pesticide Use
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Robert W. Pigg,
Mark Swartz,
Larry Olsen,
Lynnae Jess*

*Robert Pigg is a groundwater program specialist for the Michigan Department of Agriculture. Mark Swartz is the Michigan Department of Agriculture groundwater program manager. Larry Olsen is the Pesticide Education Coordinator for Michigan State University Extension. Lynnae Jess is a Pesticide Education associate for Michigan State Unversity Extension.

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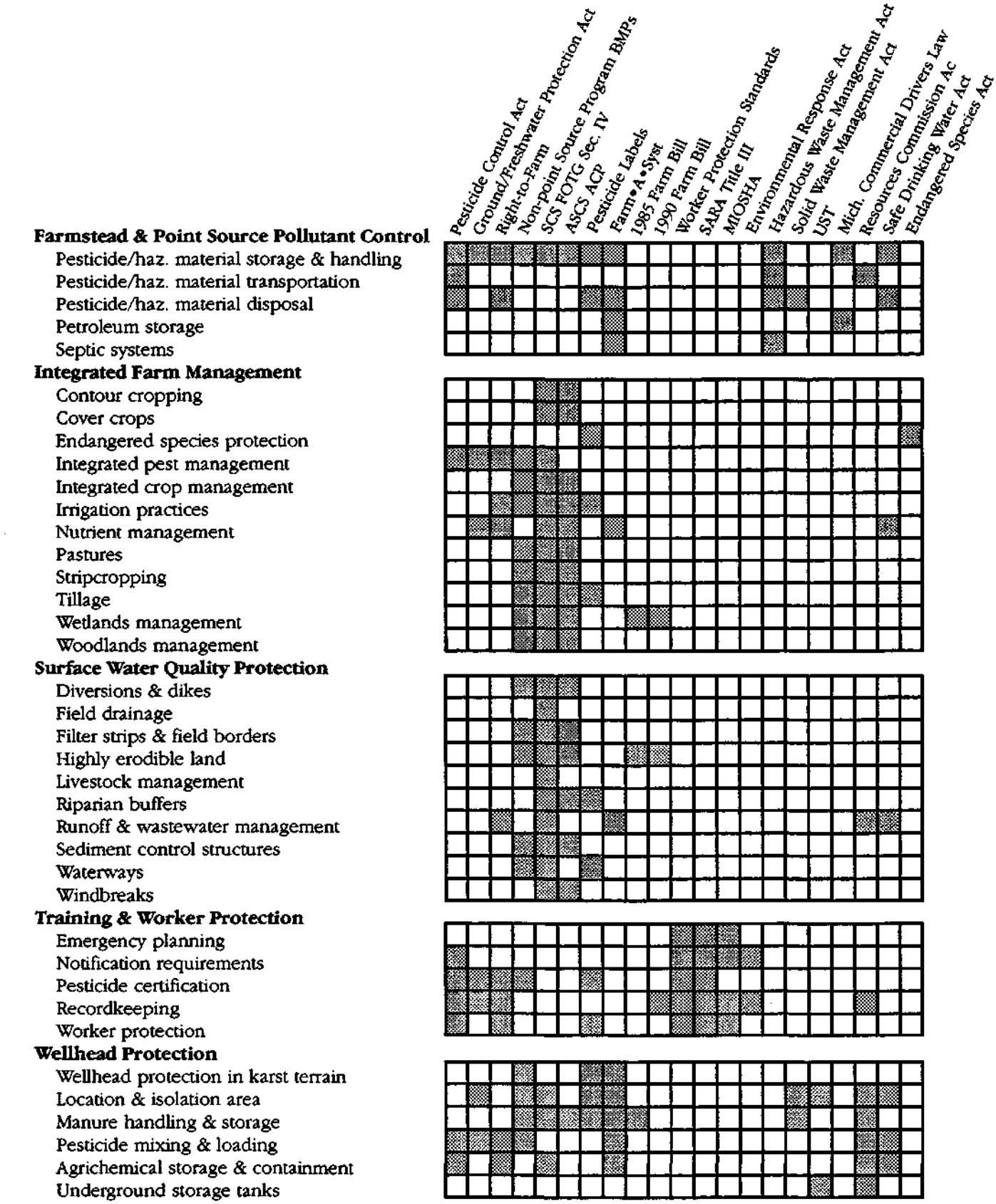
Mitch Adelman	MDNR—Environmental Response
Elgar Brown	MDPH—Water Supply
Antonio Castro-Escobar	MDA—PPPM
Keith Creagh	MDA—PPPM
Charles Cubbage	MDA—Executive
Michael Decapita	USFWS
Kathy Fedder	MDA—PPPM
Dave Ford	MSP—Motor Carrier
Shirley Gammon	USDA—SCS
Roy Hall	USDA—SCS
Lynell Marolf	MDNR—Environmental Response
Arthur Nash	MSP—Fire Marshall
Bob Payne	USDA—ASCS
Gary Rinkenbarger	USDA—SCS
Brian Rowe	MDA—PPPM
Al Shapley	MSU—Agricultural Economics
Kurt Thelen	MDA—Environmental
Dave Wade	MDA—PPPM
Tom Weise	MDNR—Wildlife
Ben Zimont	MDNR—Land and Water

INTRODUCTION

This publication summarizes federal and Michigan laws, rules and standards that affect pesticide use, fertilizer use and groundwater quality. Its purpose is to provide a clearer picture of the standards to be considered while developing groundwater stewardship practices and stewardship plans under the Groundwater and Freshwater Protection Act. This publication is also intended to facilitate interagency coordination of groundwater programs and the unification of standards. The laws, rules and standards covered, and the areas they address, are summarized in Table I.

Table 1. Summary of laws, rules and management practices directly and indirectly affecting agrichemical use and water quality in Michigan. Shading indicates general areas covered. Compiled from "References."



Michigan Pesticide Control Act

The Michigan Pesticide Control Act (Act 171 of the Public Acts of 1976, as amended) is the primary vehicle for pesticide regulation in Michigan. The Michigan Department of Agriculture (MDA) is responsible for administering Act 171. It regulates the distribution, labeling and application of pesticides. It requires the registration of pesticides, the certification of private and commercial (for hire) pesticide applicators, and the licensing of restricted use pesticides (RUP) dealers. Act 171 is implemented through regulations addressing pesticide use, restricted use pesticides, pesticide applicators and bulk pesticide storage. The act was amended in July 1993 to prohibit local units of government from enacting ordinances related to pesticides unless use of the pesticide in question would result in unreasonable adverse impacts or would violate state or federal laws. Act 171 was further amended in November 1993 by additional provisions governing the registration of RUPs, the cancellation of pesticide registrations, and the development and implementation of groundwater protection rules and activity plans.

Regulations

Regulations relevant to groundwater protection have been promulgated under Public Act 171. They are presented in Table II in the Appendix and are summarized below.

Regulation 633: Restricted Use Pesticides. Regulation 633 lists Michigan RUPs. This list includes by reference all RUPs as classified by the U.S. Environmental Protection Agency, in addition to state-specific RUPs. Pesticides that are not RUPs are general use pesticides.

RUPs may be sold only by persons holding an RUP dealer's license. Prospective RUP dealers must pass a written exam before they can be issued a license. Dealers must record all sales of RUPs and provide the sales information to the MDA monthly.

Federal law (FIFRA—the Federal Insecticide, Fungicide and Rodenticide Act) requires applicators of RUPs to be certified or to operate under the direct supervision of a certified applicator. Michigan certification rules parallel the federal laws, and as a result, RUPs may be sold only to persons who comply fully with applicator certification and registration requirements—that is, to private agricultural applicators and commercial applicators. Commercial applicator certification also allows them to apply general use pesticides for hire. All certified applicators must demonstrate additional training and knowledge to be certified in and to be able to purchase RUPs for specific categories, subcategories and application methods (e.g., aerial applications).

Regulation 636: Pesticide Applicators. Regulation 636 establishes two types of pesticide applicators. Private agricultural applicators are defined as persons applying pesticides for a private agricultural use. Commercial applicators are those persons who are not private agricultural applicators, and who use or supervise the use of an RUP, or who apply general or restricted use pesticides for hire or in the course of their regular employment.

Persons applying general use pesticides for a private agricultural purpose are exempt from certification and registration requirements. Persons who do not work for a licensed pesticide applicator and who use general use ready-to-use pesticides are also exempt from the requirements. "Ready-to-use" is defined as a pesticide used directly from the manufacturer's original container that does not require mixing or loading.

To be certified, commercial applicators must demonstrate, in a written exam, a practical knowledge of the principles and practices of pest management and the safe use of pesticides. They must meet general standards applicable to all categories and standards specifically identified for each category or subcategory of certification they desire.

Certification of private agricultural applicators requires the applicant to demonstrate, in a written or an oral exam, practical knowledge of the principles and practices of pest management and the safe use of pesticides, including federal standards set forth in regulations pertaining to the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). Certificates may restrict an applicant to certain types of pesticides or equipment.

The regulation also sets criteria for registered applicator standards. Registered applicators must demonstrate by exam a practical knowledge of the basic principles and practices of pest management, pesticide label comprehension and safe pesticide use. Registered applicators may not apply RUPs unless (1) they are under the direct supervision of a certified applicator, or (2) they have applied a particular RUP under the direct supervision of a certified applicator for a specific number of hours as required by rule, unless prohibited by the specific pesticide label. The second exemption is valid only during a registered applicator's first registration period (to encourage applicators to become certified).

Regulation 636 defines standards for trainers of applicators and for recordkeeping by commercial applicators.

Regulation 637: Pesticide Use. Regulation 637 sets standards for pesticide use. It requires that pesticides be used in a manner consistent with their labels, that applications be made in a manner that prevents off-target discharges of pesticides, and that pesticide application equipment be properly calibrated and in sound mechanical condition.

The regulation establishes a registry of persons who, because of a medically documented condition, require notification before pesticides are applied on property adjacent to their residences. Commercial pesticide applicator firms licensed in certain categories are required to notify persons on the registry before applying pesticides within a given distance of addresses on the registry. A similar rule creates a list of organic farms so that commercial applicators may take steps to avoid the inadvertent application of pesticides on organic farms. It sets notification and posting requirements for applications on lawns, golf courses, rights-of-way, and commercial and public buildings.

Commercial pesticide mixing and loading operations and commercial pesticide washing and rinsing operations are restricted to impervious pads built to contain spills and

rinsate. The regulation sets standards for handling excess pesticides and pesticide-containing materials, and it prohibits storing pesticides in underground tanks.

Regulation 637 also sets guidelines for personal protective equipment, control of off-target pesticide drift, the necessary content of pesticide service agreements, standards on claims regarding pesticide safety, the use of pesticides in schools, the establishment of integrated pest management programs for schools and public buildings, and the proper use and disposal of pesticide-containing materials.

Regulation 640: Commercial Pesticide Bulk Storage. Regulation 640 defines storage requirements for bulk pesticides. It does not regulate pesticide storage by agricultural producers for use on their farms. It sets standards for siting, building and registering bulk pesticide storage facilities; constructing primary and secondary containment areas; and facility inspection and maintenance. All bulk pesticide storage facilities must prepare discharge response plans and provide current copies to local fire and police/sheriff's departments. Facility operators must also comply with the regulation's recordkeeping requirements, which are in addition to those stipulated under Regulation 633.

Michigan Groundwater and Freshwater Protection Act

Recent changes in federal pesticide registration criteria required Michigan to develop a groundwater protection plan or face cancellation of several pesticides that may pose a threat to groundwater quality, including alachlor, atrazine, bromacil, carbofuran, cyanazine, metolachlor, metribuzin and simazine. The Groundwater and Freshwater Protection Act (Act 247 of the Public Acts of 1993) provides for the proactive protection of groundwater from contamination by pesticides and fertilizers. Under this act the MDA, in conjunction with appropriate agencies, will be developing and promoting the implementation of voluntary "groundwater stewardship practices" designed to protect groundwater. The MDA will be promoting the use of a farmstead assessment system based on the Farm•A•Syst package, which is designed to show pesticide and fertilizer users the degree to which they are following groundwater stewardship practices.

The Groundwater and Freshwater Protection Act was designed to provide the MDA the ability to help the agriculture industry develop acceptable groundwater protection plans, as well as the resources to promote education, technical assistance and cost-share programs for persons interested in groundwater quality. A Groundwater Advisory Council (GAC), which will oversee the groundwater stewardship program, was formed under this act. The MDA will be working with the SCS, Soil and Water Conservation Districts and MSU Extension to provide education, technical assistance and cost-share programs for persons wishing to implement groundwater stewardship practices voluntarily.

Resources will be available through the stewardship program for sprayer fill areas, pesticide storage facilities, irrigation scheduling and other groundwater protection practices. Support will also be available for farmers dealing with possible sources of groundwater contamination such as abandoned wells, pesticide spill containment, programs to pick up unused pesticides and pesticide container recycling programs.

The act requires that all pesticide-containing ingredients that have been confirmed in groundwater above 20 percent of the EPA's maximum contaminant level (MCL) and pesticide-containing ingredients for which a pesticide state management plan (PSMP) is required be registered as RUPs in Michigan. The director may establish additional criteria for RUP designation due to groundwater concerns.

The MDA is responsible for tracking the application of RUPs to their county of application and has the authority to require more refined tracking for pesticides requiring a PSMP. Tracking may be used to set priorities for groundwater protection programs.

The MDA will be expanding its groundwater monitoring program to provide for the general screening of groundwater quality for domestic well owners; the determination of the relative risk of groundwater contamination associated with various pesticide and fertilizer uses; monitoring to evaluate and assess problems and potential problems for pesticides requiring a PSMP; and confirmation and envelope monitoring if one or more pesticides are detected in groundwater. Other agencies are required to notify the MDA of pesticides detected during their monitoring programs.

If a pesticide is confirmed in groundwater, the director may then require the submission of any information a person may have relating to the identification, nature and quantity of pesticides and fertilizer that are or have been used on a particular site and current or past production practices that may have affected groundwater quality. These data will be considered confidential business information. The director may authorize the land application of pesticide- and fertilizer-contaminated materials at agronomic rates.

Programs developed under this act are to be funded by an increase in pesticide and fertilizer registration and tonnage fees. Because the pesticide registration fees are based on sales, the amount of revenue to be generated is currently unknown. Though this act is intended to protect groundwater from contamination, up to $15,000 per site can be used to eliminate possible contamination sources.

Michigan Right-to-Farm Act

The Michigan Right-to-Farm Act (Act 93 of the Public Acts of 1981, as amended) states that a farm or farm operation that conforms to generally accepted agricultural and management practices, as determined by the Michigan Commission of Agriculture, shall not be found to be a public or private nuisance. It also states that a farm or farm operation shall not be found to be a nuisance if it existed prior to a land use change within 1 mile of the farm boundaries if the farm operation would not have been a nuisance before the change in land use.

Producers must comply with generally accepted agricultural and management practices, as well as all applicable federal, state and local laws, to meet the provisions of the Right-to-Farm Act. The principal areas covered by the generally accepted agricultural and management practices are listed in Table III in the Appendix.

Compliance with generally accepted agricultural and management practices is voluntary. Incentives to follow the practices include protection from nuisance and harassment suits and exemption from the permit requirements of the Michigan Air Pollution Control Act. Applications of fertilizer, manure and pesticides made according to label directions and following generally accepted agricultural management practices are *not* considered releases under the Michigan Environmental Response Act (Act 307 of the Public Acts of 1982). As a result, following generally accepted agricultural management practices offers some relief or protection from liability arising from releases under the Environmental Response Act. Another incentive is that some of the practices can help farmers cut costs and increase net income by facilitating efficient nutrient and chemical management.

Generally accepted agricultural and management practices (GAAMPs) have been adopted by the Michigan Agriculture Commission in three areas:

- Pesticide utilization and pest management.
- Manure management and utilization.
- Nutrient utilization.

The practices are reviewed annually and may be updated by the Commission of Agriculture. A number of Michigan State University Extension (MSUE) publications are incorporated by reference in the generally accepted agricultural and management practices, including MSUE fertilizer and pesticide recommendations. Specific conservation practices from Soil Conservation Service (SCS) field office technical guides are also incorporated in the practices.

Technical and financial assistance to farmers is available from the SCS and the Agricultural Stabilization and Conservation Service. They provide cost-share and incentive payments to producers to implement conservation practices that can also enable them to meet provisions of the Right-to-Farm Act.

Complaints

Under a memorandum of understanding with the MDNR, all non-emergency pollution complaints concerning agricultural properties are referred to the MDA. In 1992, of all the complaints received, approximately 42 percent were referred to the MDA from the MDNR. MDA personnel make one or more farm visits to investigate the complaint. A significant number of complaints are not verified—that is, the producer is found to be in compliance with GAAMPs. In 1991 and 1992, over 40 percent of the complaints were not verified. In some instances the problem had been corrected prior to the MDA farm visit. In the vast majority of cases, non-verifiable complaints are attributable to a general lack of knowledge among rural non-farm residents about acceptable farming practices.

If a complaint is verified, MDA personnel work with the producer and with other agencies such as MSU Extension and the SCS to develop and implement GAAMPs to solve the problem. This resolves the complaint. If a producer refuses to work with the MDA, the complaint is turned over to the MDNR for further investigation. If the MDNR finds no violation of local, state or federal laws and regulations, the complaint is dismissed. Once a complaint is turned over to the MDNR, any violations have to be corrected to the DNR's satisfaction before the complaint is closed. Between 1990 and 1992, the MDA handled more than 700 cases but turned only three over to the MDNR.

Agricultural Best Management Practices Manual for Michigan's Non-point Source Pollution Program

The *Agricultural Best Management Practices Manual for Michigan's Non-point Source Pollution Program* was written to satisfy federal Clean Water Act (CWA) requirements to reduce and control non-point source pollution (NPS) of surface and groundwaters. Best management practices (BMPs) are a combination of conservation practices that must be applied collectively to reduce or prevent contamination of surface and groundwater from sediment, nutrients and other non-point source pollutants. The conservation practices are described and defined in the Soil Conservation Service (SCS) Field Office Technical Guide Section IV, "Standards and Specifications". BMPs include structural and non-structural controls, operation and maintenance procedures, and scheduling and distribution of activities. The BMPs are summarized in Table IV in the Appendix.

The agricultural BMP manual is intended for the technical staffs of the SCS, the Agricultural Stabilization and Conservation Service (ASCS), Soil and Water Conservation Districts (SWCD), the MDNR Surface Water Quality Division (MDNR-SWQD), the MDA and others. It is designed to be used with other technical references, such as MSUE fertilizer and pesticide recommendations, SCS field office technical guides and the SCS Engineering Field Handbook, when developing individual water quality resource management plans in an NPS watershed project. The BMPs are intended to comply with all applicable state and federal laws and regulations when properly implemented.

The agricultural BMP manual addresses institutional considerations by coordinating its water quality objectives with USDA program benefits and ASCS cost-share programs. The BMPs are designed to meet USDA requirements for program benefits in the Food Security Act and the Food, Agriculture and Conservation Trade Act. Significant coordination has been included in each BMP to complement the ASCS Agricultural Conservation Program and Long-Term Agreement cost-share program. Additional effort was made to utilize the Acreage Conservation Reserve program in conjunction with BMP-10 filter strips systems.

Section 319 Non-point Source Management Program Watershed Projects

CWA Section 319 non-point source management program watershed projects are divided into four phases. Phase 1 is a watershed assessment. Phase 2 requires the development of a detailed watershed plan, including a problem management appraisal. Implementation of the watershed plan occurs during phase 3, and phase 4 is an evaluation of the plan as implemented. The MDNR-SWQD is responsible for the entire process and has final approval of the completed watershed plan.

Implementation of BMPs is voluntary, but if the decision to implement a BMP is made, certain conservation practices are required to be eligible for cost-shares. Farmers are eligible for CWA Section 319 funds only if their land lies within a Section 319 watershed project area. Ten percent of Section 319 funds are to be used for groundwater projects. In October 1993, thirteen agricultural watershed projects in Michigan were being funded entirely or primarily through Section 319 funds.

Critical Areas and Priority Fields

For surface water purposes, the critical area of a Section 319 non-point source management program watershed project is generally defined as an area that contributes or potentially contributes pollutants from non-point sources that degrade water quality below desirable standards. Surface water projects may have the critical area defined in one of three ways: (1) a 1/2-mile corridor on each side of the stream and its tributaries; (2) an entire sub-basin within the watershed; or (3) an entire watershed that has surface drains adjacent to all cropland fields. The critical area for groundwater concerns consists of aquifers vulnerable to non-point source contamination, such as areas with karst terrain or unsealed aquifers overlain with permeable soils.

Priority fields are specific fields or conservation treatment units within critical areas. Priority fields are those areas where non-point source pollution contributes significantly to water quality problems; where targeted planning, implementation and financial assistance have the potential to prevent or reduce the pollution below threshold levels; and where landowners are willing to work with conservation planners to implement BMPs. *All BMPs receiving Section 319 cost-shares must lie within a priority field.*

The USDA Soil Conservation Service and Groundwater Protection in Michigan

The U.S. Department of Agriculture Soil Conservation Service (SCS) provides technical assistance and funding under a variety of programs that can be used to improve water quality. The Resource Conservation and Development Program provides coordination and assistance to local units of government for resolving community resource problems. At this time, seven RCD councils in Michigan cover the state except for the southeastern portion of the Lower Peninsula. One council has addressed local concerns about groundwater quality by conducting a demonstration project on sealing abandoned wells.

The SCS also funds PL-566, the Small Watershed Program. This program provides technical and financial assistance to treat resource problems involving surface or groundwater. The SCS provides cost-sharing for soil and water conservation practices, such as conservation tillage, nutrient and pesticide management practices, and others. The SCS is the lead agency for the PL-566 program.

USDA hydrologic unit areas are cooperative programs between the SCS, Extension, and the Agricultural Stabilization and Conservation Service (ASCS). Funding is available for educational, technical and cost-sharing assistance to control erosion, prevent pollution, and preserve surface water, groundwater and other natural resources.

The SCS is responsible for developing conservation plans and practices for the highly erodible land and wetland conservation (swamp buster) provisions in the 1985 and 1990 farm bills. Farmers must comply with these provisions if they want to participate in any USDA programs, such as conservation reserve, loan and commodity programs.

SCS county soil surveys and the SCS field office technical guides (FOTG) provide technical assistance and guidelines for resource conservation planners. Soil surveys are used with other information to calculate soil-pesticide interaction ratings. This enables the determination of soils' pesticide and fertilizer leaching and runoff potentials.

SCS technical standards and specifications (FOTG Section IV) are probably the most widely used guide to specific soil conservation and non-point source pollution control practices. In Michigan, for example, the SCS is working closely with staff members from the Michigan Department of Natural Resources Surface Water Quality Division (MDNR-SWQD) Non-point Source Unit to draft agricultural best management practices (BMPs) for Michigan's non-point source pollution program. These agricultural BMPs are designed to meet requirements of the federal Clean Water Act (CWA) while complying with Michigan laws. The BMP manual adopts the SCS FOTG Sec IV technical standards and specifications for individual conservation practices under each BMP. The BMPs consist of a combination of individual practices that are meant to be implemented together. SCS conservation practices that affect groundwater quality directly or indirectly are listed in Table V of the Appendix.

SCS funds and technical assistance can be used in conjunction with a variety of other programs. For example, the Sycamore Creek Water Quality Program in Ingham County has been funded under the following programs:

1. The Ingham County Soil and Water Conservation District, which received a $24,000 EPA grant to provide technical assistance to landowners in developing conservation plans for the watershed.
2. The Michigan DNR, which is conducting a modelling, monitoring and demonstration project for the Sycamore

Creek. Under the Michigan 1988 Non-point Source Assessment Report, approved by the U.S. EPA, Sycamore Creek was selected as one of Michigan's demonstration watersheds under the U.S. Clean Water Act Sec. 319 phase 3 implementation activity. The Sycamore Creek project will be used as a statewide demonstration project.

3. The Michigan ASCS State Committee has approved a special water quality incentives project for Sycamore Creek. In this three-year effort, $300,000 is available to fund Agricultural Conservation Program (ACP) long-term agreements to help farmers plan and implement best management practices to control erosion, prevent pollution, and preserve surface water, groundwater and other natural resources.
4. The USDA designated Sycamore Creek as one of 90 hydrologic units in the United States for the implementation of intensified educational, technical and cost-sharing assistance programs.

USDA Agricultural Stabilization and Conservation Service and Groundwater Protection in Michigan

The Agricultural Stabilization and Conservation Service (ASCS) contributes to groundwater protection in several ways. Financial assistance in the form of cost-share agreements is a key tool used to encourage agricultural producers to adopt soil- and water-conserving practices. The Agricultural Conservation Program (ACP) allocates funds for annual projects (ANAs), for long-term agreements (LTAs) and for water quality special projects. ANAs are funded for a maximum of three years; LTAs, for a maximum of five years. The ANA and LTA cost-share programs are available in all Michigan counties. The Soil Conservation Service (SCS) is assigned technical responsibility for conservation practices under the ASCS ACP. Essentially, this means that ASCS conservation practices are put in place using SCS technical standards and specifications and that cost-shares are not available until the SCS determines that the practices are implemented according to the standards.

Because ASCS cost-share programs are so widely available, other watershed and non-point source pollution projects need to coordinate carefully any cost-share arrangements with the ASCS to avoid conflicts or duplication. The ASCS will no longer split cost-sharing on a single practice or structure with another federal agency, but individual agencies can each share costs on different practices at the same time.

As an example of program coordination, the Michigan ASCS State Committee approved an ACP water quality special project for the Sycamore Creek watershed. It allocated $300,000 over three years to fund LTAs to reduce erosion and non-point source pollution of surface and groundwaters in the project area. This support was in addition to regular ANAs, which were also available to farmers in the watershed. The Sycamore Creek watershed was also designated and received funds as a USDA hydrologic unit area and as a demonstration watershed under Clean Water Act Section 319 implementation standards. The Ingham Soil Conservation District received a grant from the EPA (EPA/MDNR 205(J)(1)) to help landowners in the watershed develop conservation plans.

The ASCS also funds water quality projects under the Water Quality Incentives Program (WQIP). The WQIP provides incentive payments to farmers who meet program requirements to reimburse them for obligatory changes in land use. WQIP funds are available to USDA hydrologic unit areas, water quality special projects and Clean Water Act Section 319 demonstration watershed projects, and they can provide a valuable source of supplemental financing to other non-point source pollution reduction efforts.

The ASCS has considerable impact on agricultural land use through farm programs such as conservation reserve and commodity programs. The cumulative impact of these programs on water quality can be difficult to determine because of a lack of generally available data on the specific locations and types of land use changes ensuing from the programs. The Michigan SCS office is working with MSU to develop techniques to computerize ASCS aerial photos, which could lead to the data being much more widely held and used. ASCS conservation practices are categorized in Table VI in the Appendix.

Pesticide Labels

Pesticide manufacturers and suppliers are required to provide certain information on product labels to meet requirements of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and the Michigan Pesticide Control Act—Public Act 171 of 1976, as amended. Labels must bear the name, brand or trademark under which the product is sold, along with the name and address of the producer, registrant or person for whom the pesticide is produced. Pesticide labels are also required to list all active ingredients and the percentage of inert ingredients in the product, and must display the use classification of the pesticide (i.e., restricted use or general use). Pesticide labels are required to display the proper EPA pesticide registration number, directions for use, any required warning or precautionary statements, medical treatment information and data on environmental hazards posed by the product.

Directions for Use

Federal and state pesticide regulations make it a federal offense to use any pesticide in a manner inconsistent with its labeling. Labels must specify mixing and loading standards, allowable application methods, application rates, permissible and prohibited mixtures with other pesticides or fertilizers, and the crops and pests that the pesticide may be used on.

Pesticide labels typically list a variety of other products that can be mixed with the pesticide in question for pest

problems beyond the scope of the individual pesticide. Unless a mixture is specifically prohibited on the label, certified applicators can mix pesticides for a given use so long as the individual pesticides are registered for that use. However, producers using a mixture not specifically addressed on the label may have no product liability recourse if the mixture causes problems.

Labels must also indicate if the pesticide may be used in chemigation systems. Storage and disposal requirements must be included on labels. Restricted use pesticide labels must indicate that the product may be applied only by certified applicators or persons under their direct supervision.

Warning and Precautionary Statements

U.S. Environmental Protection Agency (EPA) regulations promulgated by authority of FIFRA set worker protection standards (WPS) and require specific information to be stated in pesticide labelling. The following provisions apply to all pesticides used to produce agricultural plants and must be referenced or appear on pesticide labels:

- Requirements for training of pesticide handlers and agricultural workers.
- Requirements for providing pesticide-specific information to employees.
- Requirements for providing decontamination sites and emergency assistance for pesticide handlers and agricultural workers.

Registrants of pesticides will be required to provide the following pesticide-specific information on labels:

- Applying the pesticide so that it contacts anyone except trained and equipped handlers is prohibited.
- Personal protective equipment for handling and early-entry intervals.
- Restricted entry interval.
- If appropriate, that workers be notified orally, by posting of signs at the treated areas or both, depending on label requirements.

Appropriate medical treatment must be listed on pesticide labels in case of accidents and contamination.

Labels are required to identify any environmental hazards associated with the pesticide use. Labels must specify any setback or isolation areas, such as riparian buffer zones or drinking water well isolation areas, within which pesticides may not be handled or applied. Labels must also indicate special requirements for pesticide applications in counties with populations of certain endangered species.

Farm•A• Syst Farmstead Assessment System

The Farmstead Assessment System in Michigan (Farm•A•Syst) is a cooperative effort between multiple agencies to increase awareness and encourage correction and prevention of potential surface and groundwater quality problems around farmsteads. The Farm•A•Syst package was developed in Wisconsin and Minnesota with the help of U.S. EPA Region V. It was adapted and modified for use in Michigan by personnel from MSU, Extension and the SCS.

Farmers can use Farm•A•Syst materials to identify water contamination risks from farmstead activities, to learn more about possible alternatives to current practices and to set priorities for minimizing those risks. The materials include fact sheets that explain a particular topic, such as drinking water well condition, and characterize relationships between groundwater quality and the topic. The fact sheets identify local resource persons who can help conduct the assessment and make necessary changes. General and technical publications dealing with particular topics are listed as well. Farm•A•Syst worksheets guide the user through a step-by-step evaluation of the relative risks posed by the particular topic.

A farmstead assessment would typically include an evaluation of soil, geologic and hydrologic factors affecting the potential for groundwater pollution from the farmstead. This step would be followed by an evaluation of farmstead structures and activities with potential to affect groundwater quality. These would usually include pesticide and fertilizer storage and handling, livestock and manure handling facilities, petroleum products storage and handling, septic and other wastewater systems, and well location and maintenance. Topics currently covered in the Michigan Farm•A•Syst materials are shown in Table VII in the Appendix.

National Food Security Act of 1985 Conservation Provisions (The 1985 Farm Bill)

Regulations promulgated under the National Food Security Act of 1985 (the 1985 Farm Bill) set forth terms and conditions for compliance with rules designed to deter farmers from converting wetlands to land suitable for agricultural production and from agricultural production on highly erodible land (HEL) and converted wetlands. The rules define HEL, wetlands and conversion. Table VIII in the Appendix summarizes the HEL and wetland rules.

Barring certain exceptions, the rules state that a person who produces agricultural commodities on HEL or designates HEL as conservation use shall be ineligible for virtually all USDA programs and benefits, including price supports and benefits under the Federal Crop Insurance Act. Similarly, any person who produces an agricultural commodity on a wetland that was converted after

December 23, 1985, or a person who converts a wetland after November 28, 1990, for the purpose of or having the effect of making the production of an agricultural commodity possible, shall also be ineligible for USDA program benefits. Virtually all technical requirements are based on U.S. Soil Conservation Service (SCS) standards and specifications.

The SCS is responsible for determining if land is HEL, a wetland or a converted wetland; whether conservation plans are based on local SCS technical guides; if a person qualifies for a variance; or if conversion of a wetland was for the purpose of or has the effect of making the production of an agricultural commodity possible. The SCS is responsible for consulting with the U.S. Fish and Wildlife Service (FWS) on minimal effect determinations (see below), wetland and converted wetland identification, restoration and mitigation plans, and conservation easements.

The ASCS is responsible for determining whether a person is eligible for USDA program benefits. To do so, the ASCS must determine whether a person produced an agricultural commodity on a particular field, whether the conversion of a particular wetland was begun before December 23, 1985, and whether the conversion of a wetland was caused by a third party. The ASCS is required to inspect a representative number of farms to determine compliance with the requirements of the rules.

Conservation districts are responsible for reviewing conservation plans, including the economic practicability and social acceptability of conservation systems in the plan, as well as any unusual situations related to land use, treatment or operations of the conservation system. Conservation districts are also responsible for overall program direction and establishment of general servicing priorities.

At present, approximately 700,000 acres of land in Michigan are classified as HEL and covered under conservation plans to prevent erosion. The SCS uses its own manual, based on definitions in the Food Security Act regulations, for wetlands identification and regulation, along with the U.S. Army Corps of Engineers 1987 manual. The corps has delegated responsibility for wetlands regulation in Michigan to the Michigan Department of Natural Resources.

Exemptions

Persons do not lose their eligibility for USDA program benefits for producing agricultural commodities on HEL if they meet one or more of the following exemptions:

- If production is in compliance with an approved conservation plan.
- If a person is actively applying an approved conservation plan, he/she has until January 1, 1995, to comply fully with the plan without becoming ineligible for benefits.
- If the production is non-commercial commodity production on an area of 2 acres or less, and the ASCS determines that the production is not intended to circumvent conservation requirements.
- If the failure to apply a conservation plan actively is:
  - Technical and minor in nature, with little effect on the erosion control purposes of the conservation plan (determination of minimal effect).
  - Due to circumstances beyond the control of the person.
- If the SCS grants a temporary variance for the purpose of handling a specific problem that cannot otherwise be addressed.

Conservation plans must be based upon and conform to SCS field office technical guides.

Wetlands

The Food Security Act rules state that a person shall not be found to be ineligible for program benefits for production of an agricultural commodity on converted wetland or for the conversion of wetland if:

- The conversion of the wetland was begun or completed before December 23, 1985.
- A wetland conversion is for a purpose that does not make agricultural production possible.
- The conversion of the wetland or production of an agricultural product on the converted wetland, individually and in conjunction with all other similar actions authorized by SCS in the area, would have only a minimal impact on the hydrological and biological aspect of area wetlands (determination of minimal effect).
- The area is an artificial lake, pond or wetland created from non-wetland to collect and retain water.
- A wetland was converted by persons other than the person applying for USDA program benefits.

U.S. Food, Agriculture, Conservation and Trade Amendments to the Food Security Act of 1985
(The 1990 Farm Bill)

The 1990 Farm Bill amended the Food Security Act (the 1985 Farm Bill) in a number of ways. The name of the Conservation Reserve Program was changed to the Agricultural Conservation Acreage Reserve Program (ACARP), and the program acreage was expanded from 40 million to 45 million acres. The two main components of the ACARP are the Conservation Reserve and the Wetlands Reserve programs. Land enrolled in either counts towards the acreage target.

Though Congress set a goal of enrolling at least 1 million acres per year in the Conservation Reserve between 1991 and 1995, no acres were added in 1993. Eligible lands are highly erodible land, marginal pastureland, land subject to water quality problems and other lands at the discretion of the Secretary of Agriculture. Some acreage was available

in 1994 for farmers with highly erodible land who were not in compliance with conservation requirements. The 1990 Farm Bill also established the Wetlands Reserve Program, with a goal of enrolling 1 million acres between 1991 and 1995. Farmed or converted wetlands are eligible under the program.

Congress created the Agricultural Water Quality Protection Program to provide incentives and cost-share assistance for farmers to change their pesticide and nutrient use practices. The program has an enrollment goal of 10 million acres between 1991 and 1995.

The Environmental Easements Program provides guidelines for the USDA to enter into easements on lands containing riparian corridors, critical wildlife habitat and environmentally sensitive land. The bill also granted the authority to enter into permanent easements to take wetlands out of production.

The 1990 Farm Bill established the Integrated Farm Management Program Option, a voluntary program designed to help growers adopt resource-conserving crops, crop rotations, integrated pest management, and other methods to reduce fertilizer and pesticide use. The program provides payments for a number of cover crops, forage legumes and non-program small grains planted on base acres. The program is administered by the SCS and ASCS.

Recordkeeping Requirements

The bill established recordkeeping requirements for pesticide applications. It affects farmers and commercial applicators who use pesticides classified as restricted use pesticides (RUPs) under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). Applicators must maintain records containing:

- The applicator's name and certification number.
- The product name and EPA registration number.
- The amount of product applied.
- The date of application.
- The location of application and the size of the treated area.
- The crop or product treated.

Applicators must provide copies of records to persons for whom the pesticides were applied and must make records available to any federal or state agency that deals with pesticide use as well as to health care professionals in the case of an emergency. The MDA is the lead agency for the recordkeeping provisions.

Congress also used the bill to create national standards governing the marketing of organically produced products.

Persons may retain their eligibility for benefits despite producing commodities on a converted wetland by mitigating the wetland processes through the restoration of a converted wetland that was converted before December 23, 1985. The regulations set standards for the conversion.

Environmental Protection Agency Worker Protection Standard

The Worker Protection Standard (WPS) rules were promulgated by the U.S. Environmental Protection Agency (EPA) by authority granted under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). The WPS is intended to eliminate or reduce workers' exposure to pesticides, to mitigate exposures that occur and to inform employees about the hazards of pesticides. The rules are directed toward the working conditions of those who handle agricultural pesticides and perform tasks related to cultivating and harvesting agricultural commodities. The WPS applies to anyone who employs workers and applies pesticides for production of agricultural plants on farms, forests, nurseries or greenhouses. A brief summary of the items covered in the bill is presented below in Table IX in the Appendix.

Exposures are limited by establishing restricted entry intervals (REIs) for all pesticides used in producing agricultural plants for which REIs have not been set according to current standards.

- A 48-hour REI is set for any product deemed highly toxic because of dermal toxicity or skin or eye irritation.
- A 24-hour REI is established for any product that is moderately toxic because of dermal toxicity or skin or eye irritation.
- A 12-hour REI is established for all other products.

Implementation and enforcement of the WPS will use the misuse provision of FIFRA, which states it is unlawful "to use any registered product in a manner inconsistent with its labeling." This means that WPS provisions or references to them must be included on pesticide labels. All products covered by the WPS and produced after April 21, 1994, must have labeling presenting this information.

The following provisions apply to all pesticides used to produce agricultural plants and must be referenced or appear on pesticide labels:

- Training of pesticide handlers and agricultural workers.
- Providing pesticide-specific information to employees.
- Providing decontamination sites and emergency assistance for pesticide handlers and agricultural workers.

Registrants of pesticides subject to the WPS will be required to provide the following pesticide-specific information on labels:

- Applying the pesticide so that it contacts anyone except trained and equipped handlers is prohibited.
- Personal protective equipment for handling and early-entry intervals.
- Restricted entry interval.

- If appropriate, that workers be notified orally, by signs posted at the treated areas or both, depending on label requirements.

The president signed legislation in April 1994 that will delay certain provisions of the WPS until January 1, 1995. The legislation does not delay the date for manufacturers to make WPS-required changes to pesticide labels. Consequently, label-specific requirements are not delayed. It is the generic provisions that are referenced but not specified on labels that were delayed. These include safety training for agricultural workers and pesticide handlers, notice of pesticide applications, maintaining an application log and displaying a safety poster. The legislation also removed crop advisors from the WPS rules until January 1, 1995. Refer to *The Worker Protection Standard for Agricultural Pesticides—How to Comply: What Employers Need to Know,* EPA 735-B-93-001, July 1993, for details on requirements.

SARA Title III

Known as the Emergency Planning and Community Right-to-Know Act of 1986, SARA Title III is intended to protect communities from chemical accidents by requiring the development of emergency response plans. It allows citizens access to information on specific hazardous and toxic chemicals stored and released in their community.

Title III is divided into four sections:

- Emergency Planning and Facility Notification (Sections 301-303).
- Emergency Notification (Section 304).
- Community Right-to-Know Reporting Requirements (Sections 311-312).
- Toxic Release Inventory Reporting (Section 313).

Farmers are *exempt* from Sections 311, 312 and 313 unless they resell chemicals as part of their business or use chemicals for non-agricultural purposes. Table X in the Appendix gives references for some of the requirements of SARA Title III.

Section 302

Any facility, including farms, that at any time has any extremely hazardous substance (EHS) stored in amounts at or above the threshold planning quantity amount must notify the State Emergency Response Commission (SERC) and the Local Emergency Planning Committee (LEPC) immediately, or within 60 days after the amount of the EHS first exceeds the threshold planning quantity. The name, address and telephone number of a facility representative must be given to the LEPC to assist in the emergency response planning process. LEPCs are responsible for preparing local emergency response plans for all facilities in their district that contain one or more EHSs at or above threshold planning quantities. Farmers are required to provide information for plan preparation at the request of the LEPC, but the LEPCs must prepare the plans.

Michigan State University Extension (MSUE) bulletins E-2173, "SARA Title III: The Farmer's Responsibilities Under the Emergency Planning and Community Right-to-Know Law," and E-2174, "SARA Title III: Agricultural Businesses' Responsibilities Under the Emergency Planning and Community Right-to-Know Law," identify some pesticides and fertilizers on the EPA EHS list that were commonly used in Michigan as of August 1991. The bulletins also list additional EPA EHS chemicals.

Section 304

This section requires immediate and follow-up reporting of any accidental spills or releases when the following are true:

- The spilled substance is an extremely hazardous substance.
- The amount of EHS spilled is at or above the reportable quantity.
- The potential exists for off-site exposure.

Off-site exposure can be interpreted very broadly, so essentially any spill of an EHS exceeding the reportable quantity should be reported.

These spills must be reported immediately to the LEPC emergency coordinator, the Pollution Emergency Alerting System (PEAS: 1-800-292-4706) and the National Response Center (1-800-424-8802). Written follow-up reports must also be submitted to the LEPC and the SERC.

Farmers must comply with all provisions of SARA Title III, including sections 311 and 312, if they have any EHSs on their property that do not meet standards for use in routine agricultural operations.

Extension bulletins E-2173 and E-2174 provide the names of many pesticides and other chemicals on the EHS list, along with their threshold planning quantities, reportable quantities, and sample forms for facility notifications (Section 302) and emergency release notifications (Section 304).

Michigan Occupational Safety and Health Act Right-to-Know Law

The Michigan Occupational Safety and Health Act (MIOSHA; Public Act 154 of 1974, as amended) was further amended by Public Act 80 of 1986, the Michigan Right-to-Know Law. The law requires employers to provide information to employees on the safe handling of hazardous chemicals and sets standards for a written hazard communication program. One or more people must be employed for right-to-know requirements to apply.

The law requires employers to make material safety data sheets (MSDS) available and mandates training of employees who work with hazardous chemicals. Chemical manufacturers and importers are required to evaluate chemicals to determine if they are hazardous. They must also ensure that MSDS are available for all chemicals they manufacture or import, and that all chemicals leaving the workplace are properly labeled or tagged.

Employers engaged in agricultural operations are not required to comply with the act for any hazardous chemicals regulated under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) or the Michigan Pesticide Control Act (Public Act 171 of 1976, as amended). In essence, this means pesticides are not covered under the Right-to-Know law.

The law covers other hazardous chemicals used on farms, such as some petroleum products, some fertilizers and other non-pesticide chemicals. Farmers who must comply with the Michigan Right-to-Know Law have to develop written hazard communication programs and employee information and training programs, and display and store material safety data sheets. Table XI in the Appendix presents references to right-to-know topics.

Michigan Environmental Response Act

The Michigan Environmental Response Act, Public Act 307 of 1982, as amended, established a process for assessing risks and providing for response activity at sites of environmental contamination. Act 307 deals with contamination caused by the release of hazardous substances. The act defines a release as any direct or indirect discharge, spill, leak or dumping of a hazardous substance into the environment, including containers holding any hazardous substance.

The MDNR is responsible for identifying and evaluating contamination sites and for ranking sites with a priority score based on criteria and methods set forth in Act 307 rules. Act 307 sets standards for the duties of owners or operators of facilities when they learn that there may be a release at the facility, including mitigation and notification requirements.

The MDNR is responsible for directing cleanup operations when contamination is found in violation of adopted rules. The MDNR is required to notify the MDA upon confirmation of a release of a substance regulated by the MDA (e.g., pesticides). The two departments are then directed to consult to develop response activities. Act 307 and the federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, commonly known as Superfund) both provide a means for public financing of remedial actions at sites where hazardous substances have polluted the environment. The Michigan law, however, ranks sites according to their present conditions and places more emphasis on existing human exposure to pollutants than the federal ranking system. Top-ranking sites receive funding for interim response activities (leaky barrel removal, bottled water provision, etc.), cleanup evaluations and feasibility studies, and response actions.

Standards. Under Act 307, the MDNR promulgates cleanup standards for contaminated sites. Several levels of required cleanup have been defined in the Act 307 administrative rules. The rules also describe standards for determining when criteria for the various levels of cleanup have been met. The cleanup levels have been described as follows:

Type A -Contamination must be cleaned to background or non-detectable levels, whichever applies.

Type B -Contaminants must be removed to a health-based standard derived using standardized exposure assumptions and acceptable risk levels. Under this scheme, cleanup levels may be above non-detectable levels but in many cases below maximum contaminant levels (MCLs).

Type C -A level of cleanup that provides for hazardous substance concentrations that do not pose an unacceptable level of risk, using site-specific risk assessments. This level allows for on-site containment of hazardous substances and for land use restrictions to substitute for cleanup at sites where environmental quality cannot be effectively restored.

Type B standards are risk-based. For carcinogens, they are set equal to a level that is estimated to cause one additional cancer above the baseline level per million persons continuously exposed over a 70-year lifespan. For non-carcinogens, the Type B standards are set for no observable adverse effects to persons continuously exposed over a 70-year lifespan.

Type C standards are most likely to be used when dealing with widespread non-point sources of contamination such as the field application of pesticides. This standard is applied when concentrations are low and the exposed population is small enough to allow the passive remediation of site contamination.

Exclusions. Sites associated with pesticide use are excluded from the definition of release (and therefore excluded from consideration for remedial action) if pesticide applications were made according to the pesticide's label directions and generally accepted agricultural and management practices (GAAMPs). It is difficult to determine if an application was made in accordance with GAAMPs, so sites associated with pesticide users have been excluded from Act 307 remedial actions activities. If it is shown that the GAAMP exemption is not applicable, persons potentially responsible for the contamination would be subject to the provisions of Act 307. Act 307 does, however, provide a remedial action process for bulk storage facilities, leaking underground tanks and other identified sources of contamination with a definable point of release.

Penalties. Penalties that can be imposed under Act 307 include both criminal penalties and liability for cleanup costs. Section 12 sets forth liability standards under this act. Liability may include all costs of response activity lawfully incurred by the state, plus interest; any other necessary response costs incurred by any other person, if they were consistent with the administrative rules; natural resources damages; and costs incurred by the state prior to promulgation of rules.

Sec. 16b provides for criminal penalties for a person who knowingly causes a release and knew or should have

known that the release could cause personal injury or property damage; or a person who intentionally makes a false statement or representation in any document filed under this act and rules; or a person who intentionally renders inaccurate any monitoring device or record required under this act or rules. Penalties under this section are consistent with those described under Act 245, the Water Resources Commission Act.

Under Act 307, the MDPH works cooperatively with the MDNR when sites are identified that threaten private or public water supplies. The MDPH evaluates sites and recommends alternative water supply systems and sources, including hookups to municipal systems, construction of new wells or provision of bottled water. A recommendation for well replacement or alternate water provision from the MDPH to the MDNR is required for the use of state funds for these purposes. State funds cannot be used to provide an alternative water supply for a site included on the site list for nitrate contamination from non-point sources or from a private septic system.

Michigan's Hazardous Waste Management Act

The Michigan Hazardous Waste Management Act (Public Act 64 of 1979, as amended) and its regulations require farmers to dispose of pesticides and pesticide containers properly. Rule 204 states that waste pesticides and pesticide containers generated by a farmer are subject to regulation as hazardous wastes unless they are disposed of properly[1]. Rule 204 also states that wastes generated by crop and animal production, including animal manures, are not hazardous wastes for the purposes of the act.

There are two ways that Michigan farmers can dispose of waste or excess pesticides without having to treat the excess pesticides as hazardous waste. The first way is to use the total volume of pesticides during approved applications, according to label directions. If a pesticide is no longer approved for any uses, this method is not an option (e.g., DDT). The second method to dispose of excess and unwanted pesticides properly is to turn them in during an approved pesticide collection program, such as the Michigan Department of Agriculture's Michigan Clean Sweep program. Otherwise, the pesticides must be disposed of in accordance with all state and federal hazardous waste laws and regulations. To minimize the amount of excess pesticides and avoid disposal problems, farmers are encouraged to purchase and/or mix only those pesticides and those quantities they are certain to need.

Empty pesticide containers can be disposed of in a regular (Type II) sanitary landfill if the containers are empty, have been triple-rinsed or power-rinsed, and have been punctured. Rinsate must be disposed of properly. This is most commonly done by applying the rinsate at or below label rates for an application permitted by the pesticide label. Farmers can also turn in properly rinsed pesticide containers during an MDA pesticide container recycling program.

[1] Pesticide storage and handling are governed by the Pesticide Control Act, Act 171 of the Public Acts of 1976, as amended, and its regulations.

Michigan Solid Waste Management Act

The Michigan Solid Waste Management Act, Public Act 641 of 1978, as amended, regulates household, commercial and industrial wastes in the state. The act and its rules define waste types and set standards for waste disposal and disposal facilities.

The act states that a person may not apply sludges, ashes or other solid waste to land unless they have an approved plan for managing nondetrimental materials for agricultural or silvicultural purposes. Analysis of the material is necessary and must include data on hazardous compounds or compounds of concern in groundwater in the waste. This is necessary to demonstrate the requirement that the waste be non-detrimental.

Nutrient and other analyses are necessary to show that the waste is appropriate for agricultural or silvicultural use. The act does not specifically address the use or disposal of animal manure.

The most recent rules of the act include sections bearing on the agricultural sector and concern the use of yard clippings and other solid waste to create compost. Yard clippings must be separated from other solid waste at the point of generation and maintained separately until used for compost. They must be managed in a way that does not create a nuisance.

The use of a solid waste other than yard clippings to make compost must be approved by the director of the DNR (or his or her designee). The use of other solid wastes shall be approved if it can be shown that the material has or will be converted to compost under controlled conditions at a composting facility, the material will not be a source of environmental contamination or cause a nuisance, and the composted material will be used at agronomic rates.

Applications of manure to farmland are not covered specifically under the act. They are addressed under the provisions of the "Generally Accepted Agricultural and Management Practices for Manure Management and Utilization" of the Michigan Right-to-Farm Act, Public Act 93 of 1981, as amended.

Though the practice is discouraged, the act states that solid waste from an individual's own household or farm, or from the planting of privately owned farmland, may be disposed of in an open dump on the person's land *unless* it contains any of the following, in which case it is considered a health hazard and dumping is prohibited:

- Asbestos waste.
- A hazardous commercial chemical product.
- A used battery.
- A pesticide container.

Open burning of solid waste from an individual's household on the individual's land is not recommended. Most local units of government prohibit any open burning of household waste. In addition, civil suits can be filed by persons to prevent an individual from burning his or her household waste. However, the state act does not prohibit people from burning their household waste on their land as long as they:

- Comply with Act 348 (the Michigan Air Pollution Act) and its rules.
- Comply with Act 329 (the Prevention of Forest Fires Act).
- Comply with local ordinances.

A person may burn trees, logs, brush and stumps in accordance with the Air Pollution Act and the Prevention of Forest Fires Act.

Michigan Underground Storage Tank Rules

Two sets of rules apply to on-farm storage tanks. The Michigan underground storage tank rules were promulgated by authority granted to the State Fire Safety Board by the Fire Prevention Code (Public Act 207 of 1941, as amended) and the Underground Storage Tank Regulatory Act (Public Act 423 of 1984, as amended). The rules focus on gasoline stations, commercial storage sites and large residential and farm tanks—those that exceed 1,100 gallons capacity. Tanks smaller than 1,100 gallons are regulated by the rules on the storage and handling of flammable and combustible liquids. They incorporate by reference the National Fire Prevention Association (NFPA) pamphlet 395, *Standard for the Storage of Flammable and Combustible Liquids on Farms, Isolated Construction Projects and in Rural Areas*. Both sets of rules are administered by the Fire Marshall Division of the Michigan State Police and the State Fire Safety Board.

The rules for storage tanks under 1,100 gallons in size (Part 5) set standards for tank construction and state that aboveground tanks must be at least 40 feet from any building or combustible material and at least 25 feet from property lines. Standards for the construction and installation of underground storage tanks are detailed in Part 2 of the rules. All areas where flammable and combustible liquids are dispensed must be protected to prevent spills from entering the groundwater, surface water and subsurface soils.

Rules for tanks greater than 1,100 gallons are more stringent. They establish general installation and operating requirements, including tank inspection, monitoring and testing. The rules provide standards for release detection and reporting requirements, release response activities, procedures for out-of-service USTs and UST closures. Financial responsibility requirements are also detailed. Following are highlights of some UST requirements and exclusions that are particularly relevant to the agricultural community.

Exclusions

By definition, an underground storage tank (UST) system does not include:

- Farm or residential tanks under 1,100 gallons in size used to store motor fuel for non-commercial uses.
- Tanks for storing heating oil for consumptive use on the premises.
- Septic tanks.
- Surface impoundments, pits, ponds or lagoons.
- Storm or wastewater collection systems.
- Flow-through process tanks.
- Any underground storage tank system under 110 gallons in size.
- An underground tank containing a *de minimis* concentration of a regulated substance.
- An emergency spill or overflow containment underground storage tank system that is emptied within 10 days after use.

However, rules on the storage and handling of flammable and combustible liquids would still apply to some of the above exclusions—namely, tanks for storing heating oil for consumptive use on the premises; surface impoundments, pits, ponds or lagoons of flammable and combustible liquids; USTs of flammable or combustible liquids that are excluded from Michigan UST regulations for not being a petroleum or hazardous material (e.g., alcohols); and USTs that contain less than 1,100 gallons of flammable and combustible liquids.

UST Setbacks from Drinking Water Wells

The regulations establish setback distances for USTs from drinking water wells.

Active UST locations installed before January 3, 1991

For active UST locations installed before January 3, 1991, USTs with secondary containment may be installed within the following distances from drinking water wells:

- 50 feet from a single-family drinking water well.
- 75 feet from a type IIb or III non-community public water well.
- 200 feet from a type I community or type IIa non-community public water well.

Existing USTs active before January 3, 1991, may be replaced by USTs without secondary containment on a one-to-one basis so long as they are more than:

- 50 feet from a single-family drinking water well.
- 75 feet from a type IIb or III non-community public water well.
- 200 feet from a type I community or type IIa non-community public water well.

UST systems installed after January 3, 1991

For UST systems installed after January 3, 1991, a UST system with secondary containment may not be installed

unless it is at least the following distance from drinking water wells:

- 50 feet from a single-family drinking water well.
- 75 feet from a type IIb or III non-community public water well.
- 200 feet from a type I community or type IIa non-community public water well.

UST systems *without* secondary containment must be installed no closer than the following distances from drinking water wells (excluding replacement USTs):

- 300 feet from a single-family drinking water well.
- 800 feet from type IIb or III non-community drinking water wells.
- 2,000 feet from type I community or type IIa non-community drinking water wells.

Michigan Motor Vehicle Code

The Michigan Motor Vehicle Code (Public Act 300 of 1949, as amended) sets licensing and operating requirements for farmers and vehicles operated as part of a farm enterprise. Farmers are not required to have a commercial driver's license if they meet the definitions of a farm vehicle driver. Farmers who do not meet the farm vehicle driver conditions must meet all commercial driver's license requirements, including hazardous materials endorsements. The conditions are:

- Vehicle must have a gross vehicle weight rating (GVWR) less than 26,001 pounds.
- Vehicle must be controlled and operated by a farmer (includes employee or family member), **AND**
- Vehicle must be used to transport agricultural or farm supplies or products to or from a farm, **AND**
- Vehicle can not be used for hire (in the operation of a common or motor carrier), **AND**
- Vehicle must be operated within 150 miles of the farm, **AND**
- Vehicle must not be carrying hazardous materials of a type or quantity requiring the vehicle to be placarded.

Farmers driving vehicles with a GVWR greater than 26,001 pounds but meeting all the other requirements above do not need a commercial driver's license, but they are required to obtain an "F" endorsement on their normal driver's license.

Farmers hauling hazardous agricultural materials (e.g., most pesticides, anhydrous ammonia) in amounts requiring placarding but meeting all the other conditions above need an "F" endorsement and a hazardous materials endorsement from the Michigan State Police only if the vehicle size is over 26,001 lbs. If the vehicle size is under 26,001 pounds, they do not need a hazardous materials endorsement on their licenses.

Farmers must still meet all applicable hazardous materials laws, such as displaying placards on their vehicles, when hauling hazardous materials in amounts requiring placards. Farmers need to display hazardous material placards only when carrying more than 1,000 pounds of most hazardous materials, including pesticides and anhydrous ammonia. Certain materials—such as some explosives, poisonous gases, dangerous when wet materials (e.g., sodium metal) and radioactive materials—must be placarded at much lower levels. When transporting hazardous materials, farmers must ensure they have proper shipping papers and that the vehicle displays the proper placards. Farmers must have emergency response information available, and they are responsible for reporting any hazardous material transportation incidents (i.e., accidents) properly. These and other issues are covered in a publication of the Michigan State Police, "Farmers in Transportation."

Michigan Water Resources Commission Act

The Michigan Water Resources Commission Act, Act 245 of the Public Acts of 1929, as amended, also known as the Michigan Clean Water Act, establishes water quality standards and permit requirements that are administered and enforced by the Michigan Department of Natural Resources (MDNR). The MDNR Surface Water Quality Division administers surface water discharge standards and permits; the MDNR Waste Management Division administers groundwater discharge standards and permits. The act states: "It shall be unlawful for any persons directly or indirectly to discharge into the waters of the state any substance which is or may become injurious to the public health, safety or welfare; or which is or may become injurious to domestic, commercial, industrial, agricultural, recreational, or other uses which are being or may be made of such waters...."

The Part 4 rules promulgated under the act regulate point source discharges of waste, including large, concentrated animal feedlots. Permits are required before wastes may be discharged, including agricultural wastes, into the surface or groundwaters of Michigan. The National Pollutant Discharge Elimination System (NPDES) requirements are adopted in the Part 21 rules, and permit applicants must meet NPDES guidelines for providing information in the application. The controlled application of chemicals for agricultural and silvicultural use by normally accepted or regulated practices is exempt from requirements for hydrogeological reports, groundwater monitoring and discharge permits.

In 1972, amendments to the act directed the MDNR to develop the Michigan Critical Materials Register of toxic chemicals and required businesses to report annually the use, discharge and disposal of certain of those chemicals.

The register is also used as the basis for regulating the storage, handling and emergency containment of critical materials near state waters. A business that uses, manufactures or discharges any substance appearing on the state's Critical Materials Register must complete and submit a critical materials report for each substance annually.

Businesses using pesticides are exempt from the reporting requirements of the Michigan CWA Critical Materials Register regulations as long as they follow generally accepted management practices and label requirements (i.e., they don't "discharge" pesticides into surface waters).

The act grants the MDNR broad powers to halt unlawful pollution of Michigan's waters. The MDNR may enter an order to abate any activity it deems to be unlawful pollution of Michigan waters. The waters of the state include "usable aquifers," defined in the Part 22 rules of the act as "an aquifer, or that portion of an aquifer or aquifer system, that is capable of providing water in sufficient quantity and of satisfactory quality, as determined from the hydrogeological study required by rule 2207, to serve 1 or more protected uses."

Protected uses include individual, public, industrial and agricultural water supplies. The Part 22 rules go on to state: "The quality of groundwaters in all usable aquifers shall not be degraded from local background groundwater quality as the result of a discharge, except as provided in rule 2210 [variances]."

Discharges into groundwater are allowed by permit. Before any permit to discharge into groundwaters can be issued, the person seeking to discharge must provide at least one hydrogeological study. The study must determine the impact the discharge may have on groundwater, existing *background* groundwater quality and existing groundwater quality; define a proposed monitoring program, and usable aquifers and other factors.

Groundwater discharges must be monitored. No waste or discharge containing materials at concentrations exceeding any maximum contaminant level (MCL) are allowed into a usable aquifer, even if local background groundwater levels for the material already exceed the MCL.

Certain activities are exempted from the groundwater discharge permit requirements:

- Disposal of sanitary wastes in volumes less than 10,000 gallons per day through approved septic or ground disposal systems.
- Controlled application of chemicals following generally accepted and regulated practices for deicing, dust suppression and domestic purposes.
- Controlled application of chemicals for agricultural or silvicultural purposes, following generally accepted management practices.
- Controlled chemical applications for natural resources and right-of-way programs used with generally accepted and regulated practices.
- Disposal of non-contact, untreated cooling water.
- Retention of storm water runoff in surface impoundments or waterways.

Michigan Drinking Water Supplies from Groundwater Sources and Their Protection

Public water supply wells in Michigan are regulated under federal and state programs. Private drinking water wells in Michigan are subject to the Michigan Public Health Code.

Federal Safe Drinking Water Act

The federal Safe Drinking Water Act of 1974 was designed to create a comprehensive national framework to ensure the safety and quality of drinking water supplies. The Environmental Protection Agency has developed national primary and secondary drinking water regulations. Primary drinking water regulations cover contaminants that can have adverse health effects, according to the EPA. Secondary drinking water regulations cover contaminants that do not endanger health but that adversely affect the aesthetic quality of water, such as odor or appearance. The EPA does not enforce these secondary regulations, although states may do so. Michigan has been delegated primary enforcement authority in the state for the federal SDWA by the EPA. Under the federal SDWA, Michigan must comply with the following requirements:

- Adopt drinking water regulations at least as strict as the national primary drinking water standards.
- Adopt and implement adequate procedures for enforcing state regulations,
- Maintain records and prepare reports as required by the EPA.
- Adopt and implement an adequate plan for providing drinking water under emergency circumstances.

Michigan Safe Drinking Water Act (Public Act 399 of 1976)

The Michigan Safe Drinking Water Act regulates public drinking water supplies. The Water Supply Division of the Michigan Department of Public Health (MDPH) is the lead agency for water supply issues. The act classifies public water supplies into three categories:

- Community supplies are classified as type I public water supplies.
- Non-community public supplies are classified as type II public water supplies.
- Public water supplies that are not type I or type II public water supplies are classified as type III public water supplies.

The administrative regulations for the act incorporate the national primary drinking water standards and federal maximum contaminant levels (MCLs) and establish additional state MCLs. Michigan does not enforce secondary drinking water standards. The regulations also set standards for monitoring and testing public water supplies.

The rules specify standard isolation areas for public water supply wells. For any existing or potential sources of

contamination—including storm and sanitary sewers, pipelines, septic tanks, drain fields, dry wells, cesspools, seepage pits, leeching beds, barnyards, or any surface water, other area or facility from which contamination of the groundwater may occur—isolation areas are:

- A 200-foot radius in all directions from the well for type I and IIa public water supplies.
- For type IIb and type III public water supplies, the isolation area has a radius of 75 feet.

For known major sources of contamination, such as large-scale waste disposal sites, sanitary landfills, land applications of sanitary wastewater or sludges, and chemical or waste chemical storage or disposal facilities, isolation areas are:

- A 2,000-foot radius for type I and type IIa public water supplies.
- For type IIb and type III public wells, an 800-foot setback from known major sources of contamination.

Chemical storage isn't specified clearly in terms of types and quantities in the act or its regulations—it appears to be a matter for interpretation. Discussions are underway between Michigan State University Extension and the MDPH Water Supply Division to decide if the use of proper chemical storage facilities allows isolation areas from these facilities to be changed to standard isolation requirements. The regulations set additional standards for well location, as well as requirements for construction and operation. Table XII in the Appendix references rules of the Michigan Safe Drinking Water Act.

Michigan Wellhead Protection Program

The purpose of Michigan's Wellhead Protection Program (WHPP) is to protect public water supply systems (PWSS) from potential sources of groundwater contamination. Michigan's WHPP was prepared to meet the requirements of the 1986 amendments to the federal Safe Drinking Water Act and is under review by the U.S. EPA.

The WHPP is a voluntary program in which communities delineate wellhead protection areas (based on geological and geochemical considerations, such as aquifer sensitivity) and potential impacts on the protected area. Because it is a voluntary program, incentives for local participation are important. Some of the proposed incentives are:

- Reduction in Michigan Department of Public Health requirements for water quality monitoring from PWSS with wellhead protection programs.
- State support for remediation at sites of environmental contamination within a wellhead protection area.
- State agency regulatory inspections targeted to wellhead protection areas.

Michigan's WHPP contains the following elements meant to satisfy federal requirements:

- Roles and duties of state and local governments and public water supply agencies.
- Delineation of the wellhead protection area for each wellhead, based on reasonably available hydrogeologic and other information.
- Identification of potential contaminant sources within each wellhead protection area.
- Management approaches for wellhead protection, including but not limited to education and regulatory approaches.
- Contingency plans for public water supply systems, indicating the location of alternate drinking water supplies.
- Proper siting of new wells to minimize potential contamination.
- Public participation.

Part 127 of Public Health Code

Private wells are covered under Part 127 of the Michigan Public Health Code. Approximately two-thirds of Michigan counties require a private well permit before a private well can be drilled. The other one-third have no permit requirements.

In March 1994, a number of changes to the Part 127 rules of the Public Health Code were adopted. Standards and specifications on pipe, grout, cement, water treatment chemicals and pumps were adopted from national organizations and associations such as the American Society for Testing and Materials. The rules allow local boards of health to establish requirements more stringent than the state rules for the installation of wells and pumps.

Setback requirements for private wells from contamination sources are:

- 800 feet from the active work area of a landfill or the land surface application of septic waste.
- 300 feet from:
  - —Land application or subsurface injection of effluent or digested sludge from a municipal wastewater treatment facility.
  - —Oil and gas wells.
  - —Petroleum product processing or storage facilities.
  - —Underground or aboveground storage tanks over 1,100 gallons in capacity lacking secondary containment.
- 150 feet from a storage or preparation area for fertilizers, agricultural chemicals or other chemicals that might contaminate soil or groundwater.
- 50 feet from:
  - —A buried sewer.
  - —A septic tank or a subsurface disposal field.
  - —A dry well.
  - —An animal or poultry yard.
  - —A seepage pit, cesspool, outhouse or any other wastewater handling or disposal unit or site of liquid wastes draining into soil.

- 50 feet from: (Cont.)
  - — Underground or aboveground storage tank systems of 1,100 gallons or larger that have secondary containment.
  - — Underground or aboveground storage tank systems less than 1,100 gallons in size.
- 10 feet from:
  - — Surface water bodies.
  - — A sump, pit or unfilled space below the ground surface, excluding crawl spaces.

The revised rules also set standards for closing abandoned wells. Well owners are responsible for closing abandoned wells.

The only water quality standard for private well water is for coliform bacteria. There are no requirements for monitoring chemicals in private wells.

Michigan Endangered Species Act

The Michigan Endangered Species Act (Public Act 203 of 1974) provides for the conservation and protection of animal and plant species endangered or threatened with extinction. The act authorizes and mandates the promulgation of rules listing endangered and threatened species in the state. The act adopts the federal endangered and threatened species lists, which are enforced by the U.S. Fish and Wildlife Service (FWS). The Michigan Department of Natural Resources (MDNR) administers the state act and maintains the federal and state endangered species lists in the state.

The primary impact of the act stems from the "taking" provision. It states that no one may take an endangered or threatened species. "Taking," defined in Sec. 2, paragraphs (j) and (k) of the act, includes harassment and the destruction or impairment of endangered species' habitat. Section 6 states that no person may possess, take, buy, sell or transport any species on the U.S. or state endangered species lists. Pesticide applications are a potential problem, particularly affecting birds, butterflies and moths. Alteration of the farm landscape can also negatively affect resident endangered species.

The U.S. Environmental Protection Agency (EPA) has determined threshold pesticide application rates that may affect listed species. This information is or will be included on pesticide labels. Counties with vulnerable endangered or threatened species will be identified on pesticide labels, and the EPA will initiate a formal consultation with the FWS for application rates at or above the threshold rate. This was a voluntary program until 1994, at which time it became enforceable.

Michigan farmers who want to be sure they are complying with the act must take the initiative and consult with the MDNR and the FWS to be sure there are no endangered species in their area. The Nature Conservancy, a private land and habitat conservation organization, is working with the MDNR and the FWS and is conducting a landowner contact program to notify and work with landowners who own property important for endangered species protection.

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APPENDIX

Table II. Reference Guide to P.A. 171 and Related Pesticide Management Practices.

Standard	P.A. 171 (Section)	Regulation	Rule No.
Integrated pest management			
Application methods	Sec. 12, 13b, 13c, 15	Reg. 637	4, 10
Environmental protection	Sec. 12, 23	Reg. 637	4
Notification requirements			
Prior notification of pesticide applications		Reg. 637	5, 16
Pesticide certification			
Certification	Sec. 12, 13	Reg. 636	3, 4, 5, 6
Labelling	Sec. 23		
Registered applicators	Sec. 13b	Reg. 636	8, 9, 10
Restricted use pesticides		Reg. 633	
Pesticide mixing & loading	Sec. 23	Reg. 637	6
Pesticide/fertilizer storage & containment			
Storage and containment methods	Sec. 23		
Washing and rinsing operations		Reg. 637	7
Pesticide/hazardous material disposal			
Disposal of pesticide containers		Reg. 637	8
Pesticide/hazardous material transportation	Sec. 23		
Recordkeeping			
Recordkeeping and reporting		Reg. 636	15
Worker protection			
Personal protective equipment		Reg. 637	9

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Table III. Reference guide to generally accepted agricultural and management practices.

Generally accepted agricultural and management practices (GAAMP)	Category	Page No.
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Infiltration areas	Manure	3
Pastures	Manure	3
Runoff control and wastewater management	Manure	2
Runoff storage ponds	Manure	2
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Nutrient management		
Fertilizer recommendations	Nutrient	5
Nitrogen management	Nutrient	7
Nutrient and waste management	Nutrient	2
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Soil and tissue testing	Nutrient	4
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Pesticide certification		
Certification	Pesticide	5
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Pesticide mixing and loading	Pesticide	11
Recordkeeping and reporting	Pesticide	12
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Table IV. Reference guide to CWA agricultural best management practices.

BMP	Page No.	BMP	Page No.
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Table V. Reference guide to SCS conservation practices.

SCS Conservation Practices	Conservation Practice Number
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SCS Conservation Practices	Conservation Practice Number
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Table V. Reference guide to SCS conservation practices (Continued).

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Table VI. Reference guide to ASCS conservation practices and references.

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Woodland improvement	FR2, P. 71

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Farm•A•Syst Practices	Fact Sheet/ Worksheet No.
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Management Practices & Definitions	Section No.
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Penalties for non-compliance	Sec. 12.4
Wetlands improvement & restoration	Sec. 12.5(b)(6)

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Table IX. Reference guide to worker protection standards.

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Table X. Reference guide to SARA Title III Requirements.

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Table XI. Reference guide to Michigan Right-to-Know Law.

MIOSHA Right-to-Know Standards	Page No.and Section
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Emergency notification	p. 2; Sec. 11, Sec. 14a, 14f
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Right-to-Know	p. 4; Sec. 14f
Worker protection	p. 2; Sec. 11, 14a, 14f

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Subject	Rule No.
Location and isolation area	Rules 807-812
Pesticide/fertilizer storage and containment facilities	Rules 808, 812
Runoff control and wastewater management	Rules 808, 812

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NOTES

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