
17. POINT SOURCE EFFLUENT & RECEIVING WATER MONITORING

POINT SOURCE COMPLIANCE – CHEMICAL LEVELS IN EFFLUENTS

Contact: Tom Mugan
Last updated: 10-2007

Status: Currently in Place

Targeted compliance monitoring for WPDES permittees has been in place since the beginning of the WPDES permitting program and is conducted as need arises. As staff conduct compliance monitoring and inspections they determine on a case-specific basis whether samples are necessary. This monitoring is covered under 106 funds from EPA as well as GPR and segregated funds covering staff time. There is currently a basic agreement with the State Lab of Hygiene to fund this sampling.

Monitoring Objectives

Clean Water Act Objectives

- Determining water quality standards attainment
- Identifying causes and sources of water quality impairments
- Supporting the implementation of water management programs
- Supporting the evaluation of program effectiveness

Specific Objectives

- Monitor wastewater effluent or other discharge waste streams and/or groundwater monitoring wells for compliance with permit limits
- Monitor effluent or other discharge waste streams and/or groundwater monitoring wells to evaluate the precision and accuracy of data submitted by permittees

Monitoring Design

The WPDES program for traditional industrial and Publicly Owned Treatment Works (POTW) sources is based significantly on self-monitoring data which is collected and analyzed by permitted facilities and reported to the WDNR. WDNR is responsible for (1) evaluating this information for compliance with permit terms and conditions and (2) assuring the data are accurate and representative of effluent or discharge quality. The protocol for this component varies depending on the specific situation, with the primary purpose to evaluate the permittee's sampling and analytical methodologies. Examples include:

- Split samples from permittee's sampling equipment
- Grab samples of effluent or other waste streams
- Composite samples collected using WDNR composite samplers
- Groundwater samples collected from monitoring wells
- Whole effluent toxicity monitoring

In all instances, compliance monitoring serves as a cross-check for laboratory analysis to assess laboratory QA/QC.

Core and Supplemental Water Quality Indicators

Permit compliance monitoring is intended only to be a direct measurement of compliance with limits in WPDES permits. Bacterial sampling for measuring success of disinfection or whole effluent toxicity testing are primarily indicators of potential health risks or toxicity concerns for aquatic life, respectively. However, permit compliance is based upon the direct measurement of the noted parameters.

Quality Assurance

This activity is covered under the Department's general Quality Management Plan and the WPDES program's inspection strategy (see references)

Data Management

Self-reported monitoring data from permittees is stored in SWAMP and is also accessible to staff through the Surface Water Data Viewer. WDNR-collected compliance monitoring data are available in SWIMS if staff have obtained a station number (if no station number has been obtained, then the data are located in SWIMS worktables). SWIMS has the ability to cross reference outfall numbers to each station, but staff resources to do so are limited at this time.

Data Analysis/Assessment

Data collected within this element is primarily used only for site-specific or incident-specific decision-making. Because the information is primarily intended to capture a given moment, there is no appropriate statistical or other analysis for the information that is collected. If data are collected over a period of time, simple averages (e.g., weekly, monthly, etc.) may be used in assessing compliance with permit limitations.

Reporting

Data from this sampling is stored in the permit files and is used in assessing compliance, providing data for potential enforcement actions, and developing permit issuance or reissuance requirements. Data are available to the public through open records requests.

Programmatic Evaluation

No evaluation program has been developed for this monitoring component.

General Support and Infrastructure Planning

Staff and Training - Approximately 100 FTE are currently involved in the WPDES program in some way. Because of program responsibilities, only about one-half of this number may potentially conduct monitoring under this program component. There is no formal training program for staff in the collection of samples for this program component. Training is via mentoring or self-training on the part of individual staff. (No estimate at this time for required staff to fully implement this program component.)

Laboratory Resources - Existing SLOH laboratory resources are sufficient for this component of the program.

Funding - This monitoring is covered under 106 funds from EPA as well as GPR and segregated funds covering staff time. Funding levels vary depending on the level of sampling needed each year.

*Note: WDNR operates 14 fish hatcheries throughout the state which use groundwater and/or surface water to hatch and rear fish for stocking in public waters. These hatcheries are subject to WPDES permits and are required to monitor effluents and submit results to WPDES program staff for entry into the SWAMP database. WDNR sets funds aside from the Basic Agreement with the State Lab of Hygiene to analyze these samples.

References

“WPDES Inspection Strategy”, Wisconsin Department of Natural Resources, Bureau of Watershed Management, April 10, 2003

WHOLE EFFLUENT TOXICITY (WET) TESTING – BIOLOGICAL EFFECTS

Contact: Kari Fleming

Last updated: 9-2007

Status: Currently in Place but Reduced Implementation

This program has been in place since the late 1980s as an EPA mandated part of the NPDES program. However, staff time on this program has recently been reduced from 1 FTE to .5 FTE

Monitoring Objectives

Clean Water Act Objectives

- Establishing, reviewing and revising water quality standards
- Identifying causes and sources of water quality impairments
- Supporting the implementation of water management programs
- Supporting the evaluation of program effectiveness

Specific Objectives

The whole effluent toxicity (WET) testing program conducted by the WDNR assesses the biological quality of WPDES permitted effluents statewide. Major objectives include the following:

- Conduct whole effluent toxicity (WET) tests on representative aquatic organisms in a variety of wastewater effluents from municipal and industrial sources for purposes of determining which facilities require permit limitations and/or monitoring conditions.
- Assess the success of wastewater treatment processes to remove toxic components and thereby meet the directives of whole effluent toxicity-based water quality standards in chs. NR 105 and 106, Wis. Adm. Code.
- Determine the relative acute toxicity of these effluents using the Lethal Concentration (LC₅₀), the effluent concentration at which 50% of organisms die during the test, and the relative chronic toxicity of these effluents using the Inhibition Concentration (IC₂₅), an estimate of the effluent concentration which causes a 25% reduction in growth or reproduction of the test organisms.
- Determine the relative toxicity of ambient waters upstream of effluent discharges.

Monitoring Design

All surface water dischargers (~550 non-industrial; ~290 industrial) are evaluated at the time of permit reissuance, to determine whether acute and chronic whole effluent toxicity (WET) monitoring and limits are appropriate. Of those that are flagged, approximately 250 acute tests and 225 chronic tests are performed each year by Wisconsin permittees, as required by their WPDES permits. Much of the sampling is done at the dischargers' expense, and WDNR verifies their sampling accuracy with spot checks.

The "State of Wisconsin Aquatic Life Toxicity Testing Methods Manual" (Methods Manual) provides laboratory procedures and technical guidance for permittees and laboratories performing WET testing for the WPDES permit program. The Methods Manual is referenced in ss. NR 106.09, NR 219.04, and NR 149.22, Wis. Adm. Code, and WPDES permits and is required for use when determining compliance with WET-related permit requirements. All WET tests conducted for WPDES compliance must be performed according to the Methods Manual, by a lab certified or registered by the WDNR.

The "Whole Effluent Toxicity (WET) Program Guidance Document" (WET Guidance Document) was created to supplement the Methods Manual and assist WDNR staff when determining permit requirements regarding WET testing and to assist permittees and their labs when conducting WET tests in accordance with these permits. The WET Guidance Document contains over 20 chapters, covering topics including WET

sampling protocols, limits & monitoring, data review procedures enforcement, toxicity reduction evaluations, and more.

In addition to permit-required WET monitoring conducted by permittees, the WDNR maintains a contract with the UW-Madison State Lab of Hygiene (SLOH) Biomonitoring Lab to perform WET tests in conjunction with compliance inspections and/or to supplement existing data. Under this basic contract, the SLOH performs toxicity tests on effluents, sediments, and receiving waters, and special studies as needed by the WDNR. Approximately 30 acute tests and 25 chronic tests are performed each year by the SLOH, at the request of WDNR field staff.

WET data collected during previous permit terms by the permittee and the SLOH Biomonitoring Lab is used by WDNR staff to evaluate whether a WET limit is necessary and how much WET monitoring should be done in the reissued permit. The WDNR establishes WET limits “to insure that substances shall not be present in amounts which are harmful to aquatic life...” (ch. NR 106, Wis. Adm. Code). WET limits are given whenever WET and/or other data shows the potential for a toxicity problem.

Core and Supplemental Water Quality Indicators

Two species of aquatic organisms are routinely used in WPDES permit-required WET tests. The invertebrate (crustacean) *Ceriodaphnia dubia* represents primary consumers in the aquatic food chain. This is a native organism to Wisconsin ponds, quiescent sections of streams and rivers, and lakes. *C. dubia* is a vital link in the food chain because they feed on algae and are a significant source of food for small fish.

The fathead minnow, another native species, is the other extensively used test organism. It belongs to the family Cyprinidae (carps and minnows), the dominant freshwater family in terms of number of species. It thrives in ponds, lakes, ditches, and streams. Fathead minnows feed on organisms like *C. dubia* and are categorized as secondary consumers.

A third organism, *Selenastrum capricornutum*, a green algae, is not required in WPDES compliance tests, but is used (in addition to *C. dubia* and the fathead minnow) in all tests conducted by the SLOH to determine whether those effluents may cause adverse impacts to primary producers in the aquatic environment.

Acute and chronic WET tests consist of a primary control (receiving water, also used for dilution), a secondary control (standard lab water) and a minimum of five effluent concentrations. Acute tests last 48-96 hours and are used to determine the Lethal Concentration (LC₅₀), a statistical interpretation of acute data, which predicts the percentage of effluent that would cause 50% of the test population to die. Chronic tests last 4-7 days and are used to determine the Inhibition Concentration (IC₂₅), a statistical interpretation of chronic data which predicts the percentage of effluent that would cause a significant reduction (25%) in growth or reproduction of the test population, when compared to a control. The LC₅₀ and IC₂₅ are standard measures used to predict whether an effluent has the potential to have a damaging effect on the survival, reproduction or growth of aquatic life in the receiving stream.

Quality Assurance

All WET tests conducted for WPDES compliance must be performed according to the Methods Manual, by a lab certified or registered by the WDNR, according to ss. NR 149.22 and NR 219.04, Wis. Adm. Code.

According to the Methods Manual, WET Test Report Forms are required to be submitted for demonstrating test completion and compliance with a WPDES permit. The WET data reported on these forms are checked by the Biomonitoring Coordinator to confirm test conditions, review reference toxicant testing and water chemistry information, check for compliance with test acceptability criteria, and a thorough review of test results and concentration-response relationships to determine the reliability of test results.

Data Management

All WET results are considered public information and are available upon request. Copies of the WET Report Forms are stored in WPDES permit and WET files for each facility. Data are captured electronically in a WET database, within the “System for Wastewater Applications, Monitoring, and Permits” (SWAMP) computer system. Data summary reports can be generated and WET Checklists completed by the SWAMP system, using this electronic data.

Data Analysis/Assessment

Each WET test is evaluated by the Biomonitoring Coordinator at the time of testing to assess the level of toxicity, if any, present in the effluent sample (this data review process is described in detail in Chapter 1.5 of the WET Guidance Document). Reported lethality in acute tests and statistically significant reductions in growth or reproduction, in chronic tests are the primary data evaluated. At the time of permit reissuance permits staff, with assistance from the Biomonitoring Coordinator, evaluate previously collected WET data and other information, as described in Chapter 1.3 of the WET Guidance Document, to determine whether WET limits and monitoring is needed for the given discharge.

To help permit staff make WET limit and monitoring decisions, the "WET Checklist" was created in the “System for Wastewater Applications, Monitoring, and Permits” (SWAMP) computer system. Instructions for using the Checklist, selecting representative data, and assigning WET limits and monitoring, are given in Chapter 1.3 of the WET Guidance Document. The Checklist is designed to assist staff when assigning WET limits and levels of WET monitoring to individual discharges, based on their potential to exhibit toxicity or exceed water quality standards. The Checklist assigns points based on the number of factors present that increase the chances for toxicity. As the potential for toxicity increases, more points accumulate and more monitoring is recommended to insure that toxicity is not occurring.

Reporting

Hard copies of the results from permit-required tests and electronic copies of SLOH-conducted tests are submitted to the Biomonitoring Coordinator, usually within 45 days of the test's end. The Biomonitoring Coordinator completes a thorough data review, then distributes copies to appropriate permits and primary enforcement staff in the regions, usually within a few weeks of the lab report becoming available. Report forms then become part of the permit and WET files for the facility. A copy of the WET Test Report Form can be found on pp. 41-44 of the Methods Manual.

WET data are summarized, evaluated, and reported in water quality based effluent limit memos for each discharge at the time of permit reissuance.

Summaries of WET data trends and overall program results are reported biannually in the Wisconsin Water Quality Assessment Report to Congress (305(b) report).

The WET Guidance Document, Methods Manual, a list of certified labs, along with other WET program information and updates, is provided on the department's website, at:

<http://dnr.wi.gov/org/water/wm/ww/biomon/biomon.htm>.

Programmatic Evaluation

WET data from individual facilities is evaluated by department staff at each permit reissuance to determine if adjustments are needed in monitoring frequencies or if toxicity reduction evaluations (TRE) are necessary to determine the source of known problems. Statewide, historical WET and TRE data are also evaluated regularly by the Biomonitoring Coordinator to look for trends and to evaluate the usefulness of certain program tools (for example, to determine if the WET Checklist continues to be appropriate for use in most situations).

The WET Guidance Document, while comprehensive, is meant to be dynamic, and is therefore regularly updated. This is due in part to the impact science and technology has on the WET program and experience

gained during implementation of the program. The maintenance of this document is the responsibility of the Biomonitoring Coordinator and it is updated and improved with input from department staff, permittees, and others as program needs dictate. To date, this document has been updated, on average, about once per year. Since its creation in November 1996, this document has been revised seven times - the first revision took place in June 1997; the latest in June 2005.

The first edition of the Methods Manual was created in 1996, to provide the test methods and laboratory procedures that must be followed in order to maintain laboratory certification and when conducting WET tests for WPDES compliance. A second edition of the Methods Manual was published in November 2004 (rule revisions made it appropriate for use in the WPDES program starting June 1, 2005). A second edition was necessary in order to make improvements to WET test methods based on the latest science, derived from studies conducted by the SLOH, USEPA, and others. Changes were also made based on WET program experience gained since the first edition was written and comments gathered from permittees, WET laboratories, and the general public.

General Support and Infrastructure Planning

The Biomonitoring Coordinator serves as the principal staff expert and coordinator of the Bureau of Watershed Management's Biomonitoring and WET testing programs. Responsibilities include, but are not limited to the development, revision, and implementation of the Methods Manual and the WET Guidance Document; the review and evaluation of all WET and TRE data; the development and maintenance of WET-related permit language; and maintenance of the SWAMP WET database. This position also provides technical expertise and training to bureau and regional WDNR staff and external customers on Biomonitoring and WET program issues. In recent years, due to staff reductions within the department, approximately 50% of this position is spent on issues unrelated to the WET program (historically, 100% of this position was devoted solely to the WET program).

In 1988 the SLOH Biomonitoring Lab began as a joint effort between the WDNR and SLOH in both its physical construction and its self directed management style. From its inception, the lab's management team has included lab staff and representatives from the WDNR. The SLOH/DNR Biomonitoring Team meets biweekly, as needed, to discuss the lab's activities, problems, and the needs and priorities of the WDNR. This constant interaction and excellent communication results in a very high level of responsiveness to the WDNR's needs.

Over the years, the SLOH has been able to provide many new and varied services to the WDNR. Unfortunately, even though the amount and variety of services provided by the SLOH has increased over the years, the level of monetary support that the WDNR has been able to allocate to the SLOH has remained static. The WDNR provides only \$144,000 annually to maintain the Biomonitoring Lab and to contract for specific services. Under this basic contract, the SLOH performs toxicity tests on effluents, sediments, and receiving waters, and special studies as needed by the WDNR (including test method development, training/guidance to private labs, water quality criteria development, etc.). The amount of this basic contract has not changed since the lab was built in 1988, even though the annual operating costs of the Biomonitoring Lab have risen to over \$575,000. In order to provide the same level of service that the WDNR has come to rely on, the SLOH/DNR Biomonitoring Team has had to find other ways to supplement the Lab's income. In recent years, other sources of revenue have included fee for service testing, outside grant money, the reallocation of other SLOH funds, and others.

References

Wisconsin Administrative Code. Chapter NR 105. Surface water quality criteria for toxic substances. WDNR, Madison, WI. Available from Document Sales, 202 S. Thornton Ave., Madison WI 53703. Phone (608) 266-3358.

Wisconsin Administrative Code. Chapter NR 106. Procedures for calculating water quality based effluent limitations for toxic and organoleptic substances discharged to surface waters. WDNR, Madison, WI. Available from Document Sales, 202 S. Thornton Ave., Madison WI 53703. Phone (608) 266-3358.

Wisconsin Administrative Code. Chapter NR 149. Laboratory Certification and Registration. WDNR, Madison, WI. Available from Document Sales, 202 S. Thornton Ave., Madison WI 53703. Phone (608) 266-3358.

Wisconsin Administrative Code. Chapter NR 219. Analytical Test Methods and Procedures. WDNR, Madison, WI. Available from Document Sales, 202 S. Thornton Ave., Madison WI 53703. Phone (608) 266-3358.

Wisconsin Department of Natural Resources. 1996 (with subsequent annual revisions). *Whole Effluent Toxicity (WET) Program Guidance Document*. Available at <http://dnr.wi.gov/org/water/wm/ww/biomon/biomon.htm>, or from the Department's Biomonitoring Coordinator at: Bureau of Watershed Management, P.O. Box 7921, 101 S. Webster St., Madison, WI 53707-7921. Phone (608) 267-7694.

Wisconsin Department of Natural Resources. 2004. *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual*, Edition 2. (PUBL WT-797) Available at <http://dnr.wi.gov/org/water/wm/ww/biomon/biomon.htm>, or from the Department's Biomonitoring Coordinator at: Bureau of Watershed Management, P.O. Box 7921, 101 S. Webster St., Madison, WI 53707-7921. Phone (608) 267-7694.

TOXICITY TESTING OF RECEIVING WATERS – BIOLOGICAL EFFECTS

Contact: Kari Fleming
Last updated: 9-2007

Status: Partially in Place

Though the framework for this program was established in the late 1980s and a low level of monitoring is currently being done, the program has not yet been fully implemented. Increased funding and staff time would be required to implement this program to its full extent.

Monitoring Objectives

Clean Water Act Objectives

- Establishing, reviewing and revising water quality standards
- Determining water quality standards attainment
- Identifying impaired waters
- Identifying causes and sources of water quality impairments
- Supporting the implementation of water management programs
- Supporting the evaluation of program effectiveness

Specific Objectives

Ambient toxicity tests are conducted on representative aquatic organisms in surface water samples taken from streams, rivers, and lakes statewide (including the Great Lakes) to achieve the following objectives:

- Identify causes of toxic pollution and sources (point or nonpoint) of surface water impairments,
- Determine the overall effectiveness of pollution control programs
- Characterize and define trends in the biological conditions of the state's waters

- Identify new or existing water quality problems and act as a triggering mechanism for special studies or other appropriate actions
- Assess the level of attainment of designated use categories and the causes of any impairment for reporting required under Sections 305(b) and 303(d) of the Clean Water Act
- Review existing water quality standards and establishment of water quality based effluent limits for WPDES permits in some situations.

Monitoring Design

WDNR maintains a contract with the UW-Madison State Lab of Hygiene (SLOH) Biomonitoring Lab and, under this basic contract, the SLOH performs toxicity tests on effluents, sediments, and receiving waters, and special studies as needed by the WDNR. WDNR field staff select targeted surface water sites for ambient toxicity testing of streams, rivers, and lakes (including the Great Lakes) in order to identify causes of pollution and sources (point or nonpoint) of surface water impairments, to determine the overall effectiveness of pollution control programs and/or to identify long term water quality trends. Selected sites often undergo a series of tests, usually upstream and downstream of potential pollution sources, to determine whether toxicity is present and where toxicity may be coming from.

Core and Supplemental Water Quality Indicators

- Three species of aquatic organisms are routinely used in ambient toxicity tests. The invertebrate (crustacean) *Ceriodaphnia dubia* represents primary consumers in the aquatic food chain. This is a native organism to Wisconsin ponds, quiescent sections of streams and rivers, and lakes. *C. dubia* is a vital link in the food chain because they feed on algae and are a significant source of food for small fish.
- The fathead minnow, another native species, is the other extensively used test organism. It belongs to the family Cyprinidae (carps and minnows), the dominant freshwater family in terms of number of species. It thrives in ponds, lakes, ditches, and streams. Fathead minnows feed on organisms like *C. dubia* and are categorized as secondary consumers.
- A third organism, *Selenastrum capricornutum*, is a freshwater green algae native to Wisconsin ponds, quiescent sections of streams and rivers, and lakes. It is a vital link in the food chain because they are a significant source of food for invertebrates and small fish. *S. capricornutum* is thought to be representative of higher order vascular plants, and is used in ambient toxicity tests to determine the presence of adverse impacts to primary producers in the aquatic environment.
- Acute and chronic ambient toxicity tests consist of a control (standard lab water) and a minimum of five test concentrations (surface water samples diluted with standard lab water). Acute tests last 48-96 hours and are used to determine the Lethal Concentration (LC₅₀), a statistical interpretation of acute data, which predicts the concentration of test material that causes 50% of the test population to die. Chronic tests last 4-7 days and are used to determine the Inhibition Concentration (IC₂₅), a statistical interpretation of chronic data which predicts concentration of test material that causes a significant reduction (25%) in growth or reproduction of the test population, when compared to the control. The LC₅₀ and IC₂₅ are standard measures used to predict adverse effects on the survival, reproduction or growth of aquatic life in the receiving stream.

Quality Assurance

The "State of Wisconsin Aquatic Life Toxicity Testing Methods Manual" (Methods Manual) provides laboratory procedures for toxicity testing. The "Whole Effluent Toxicity (WET) Program Guidance Document" (WET Guidance Document) was created to supplement the Methods Manual and contains guidance related to sampling protocols, data review procedures, toxicity reduction evaluations, and more.

Ambient toxicity tests are performed by the SLOH, which is certified by the WDNR under both state (according to s. NR 149.22, Wis. Adm. Code) and federal (according to National Environmental Laboratory Accreditation Conference) standards. All tests are performed according to procedures in the Methods Manual.

Ambient toxicity data are reported to the Biomonitoring Coordinator, who confirms test conditions, reviews reference toxicant testing and water chemistry information, checks for compliance with test acceptability criteria, and reviews concentration-response relationships to determine the reliability of test results.

Data Management

All ambient toxicity test results are considered public information and are available upon request. Copies of test reports are stored in site-specific files maintained by the Biomonitoring Coordinator and regional staff. An electronic database is maintained by the SLOH and contains basic information regarding each test. The SWIMS data system will provide an accessible location for this data starting in 2006.

Data Analysis/Assessment

Each test is evaluated by the Biomonitoring Coordinator at the time of testing to assess the level of toxicity, if any, present in surface water samples (this data review process is described in detail in Chapter 1.5 of the WET Guidance Document). Reported lethality in acute tests and statistically significant reductions in growth or reproduction, in chronic tests are the primary data evaluated. Field staff then use the data to identify water quality problems and the need for additional studies or other appropriate actions.

Reporting

Electronic copies of ambient toxicity tests are emailed by the SLOH tests to the Biomonitoring Coordinator, usually within 30 days of the test's end. The Biomonitoring Coordinator completes a thorough data review, then distributes copies to appropriate staff in regional offices.

Summaries of ambient toxicity data trends and overall program results are reported biannually in the Wisconsin Water Quality Assessment Report to Congress (303(d)/305(b) Report).

Programmatic Evaluation

Toxicity data from individual sites is evaluated by field staff to determine if adjustments are needed in monitoring frequencies or if toxicity reduction evaluations (TRE) are necessary to determine the source of ambient toxicity problems. Statewide, historical ambient toxicity and TRE data are also evaluated regularly by the Biomonitoring Coordinator to look for trends and to evaluate the success of the program.

General Support and Infrastructure Planning

The Biomonitoring Coordinator serves as the principal staff expert and coordinator of the Bureau of Watershed Management's Biomonitoring and Whole Effluent Toxicity (WET) testing programs. Responsibilities include, but are not limited to the development, revision, and implementation of the Methods Manual and the WET Guidance Document; and the review and evaluation of all ambient, WET, and TRE data. This position also provides technical expertise and training to bureau and regional WDNR staff and external customers on program issues. In recent years, due to staff reductions within the department, approximately 50% of this position is spent on issues unrelated to the toxicity testing programs. Of the remaining 50%, almost all of this time is spent on the WET program, which leaves little staff effort to devote to ambient toxicity testing program support and coordination.

The SLOH provides many services to the Department, of which ambient toxicity testing is only a small portion. Unfortunately, even though the amount and variety of services provided by the SLOH has increased over the last 15 years, the level of funding the WDNR has been able to allocate to the SLOH has remained static. The WDNR provides only \$144,000 annually to maintain the Biomonitoring Lab and to contract for specific services. Under this basic contract, the SLOH performs toxicity tests on effluents, sediments, and receiving waters, and special studies as needed by the WDNR (including method development, training/guidance to private labs, water quality criteria development, etc.). The amount of this contract has not changed since the lab was built in 1988, even though annual operating costs at the Biomonitoring Lab have risen to over \$575,000. In order to provide the same level of service that the WDNR has come to rely on, the SLOH/DNR Biomonitoring Team has had to find other ways to supplement the Lab's income. In recent years,

other sources of revenue have included fees for service testing, outside grant money, the reallocation of other SLOH funds, and others.

Due to shortages in staffing and funding, the ambient toxicity testing program is not well supported. Data are stored in the SLOH database but is not captured electronically by the Department and is not easily accessible by staff or external customers. Testing is limited and covers only a few sites scattered around the state on an annual basis. Tests are often representative only of short periods of time and are not repeated in successive years, so analysis of long-term trends is often impossible. In many cases, the number of samples in a given study is also limited, which makes the cause and source of any adverse effects difficult to determine.

References

Wisconsin Administrative Code. Chapter NR 105. Surface water quality criteria for toxic substances. WDNR, Madison, WI. Available from Document Sales, 202 S. Thornton Ave., Madison WI 53703. Phone (608) 266-3358.

Wisconsin Administrative Code. Chapter NR 106. Procedures for calculating water quality based effluent limitations for toxic and organoleptic substances discharged to surface waters. WDNR, Madison, WI. Available from Document Sales, 202 S. Thornton Ave., Madison WI 53703. Phone (608) 266-3358.

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