

Ohio Environmental Protection
Agency Fact Sheet for
National Pollutant Discharge Elimination System (NPDES)
General Permit for Discharges
of Non-Contact Cooling Water

I. Background

The federal Water Pollution Control Act [also referred to as the Clean Water Act (CWA)], which was enacted in 1972, provides that the discharge of pollutants to waters of the United States from any point source is unlawful, unless the discharge is in compliance with a NPDES permit.

Many commercial and industrial entities have the need to discharge wastewater characterized as “non-contact cooling water” from the operation of their facilities. Non-contact cooling water is defined as wastewater which does not come into contact with the process operations of a facility, and is used only to convey heat from the facility. U.S. EPA states that non-contact cooling water is used to reduce temperature and does not come into direct contact with any raw material, intermediate product, waste product (other than heat), or finished product. The primary concern regarding the discharge of non-contact cooling water is ensuring that waste heat conveyed to surface waters of the State does not result in violations of Ohio’s water quality standards.

Geothermal heating and cooling systems use the difference between groundwater and surface temperatures to extract heat during the winter (and discharge cooler water); during the summer the system adds heat to the discharge and cools the building. Some types of geothermal systems discharge to surface waters of the state, or to surface waters via a municipal separate storm sewer system (MS4). Most of these discharging systems (called open-loop systems) pump groundwater through a heat exchanger and out to a stream or lake. These systems add small amounts of heat, and possibly concentrated amounts of minerals or pollutants that do not exist in the surface water. As a result, these systems discharge pollutants to surface waters and are therefore subject to NPDES requirements.

Ohio EPA has elected to renew the existing statewide general permit authorizing the discharge of non-contact cooling water to waters of the State. Additionally, the Agency has determined that discharges from geothermal systems, formerly covered by the statewide geothermal system discharge general permit, may also be authorized by coverage under the general permit for non-contact cooling water.

Dischargers which meet the eligibility requirements may apply for coverage this NPDES general permit, instead of seeking coverage under an individual NPDES permit. The primary conditions determining eligibility are: 1) the critical low flow in the stream which will receive the discharge; and 2) ensuring that the discharge consists of only non-contact cooling water (and geothermal water).

Eligibility is discussed in more detail in the next section of this document.

II. Description of General Permit Coverage and Eligibility

The general permit is proposed for a duration of five years.

The permit covers non-contact cooling water discharges to waters of the State, including discharges from geothermal heating and cooling systems. The permit does not cover any discharges that the Director of the Ohio EPA has determined to be contributing to a violation of a Water Quality Standard (WQS) as determined in Ohio Administrative Code, Chapter 3745-1.

Open-loop geothermal systems draw water from a ground water aquifer, pass the water through a heat exchanger to remove heat (winter) or add heat (summer) to the water. The water is then discharged to a surface water of the state. The permit covers only these 'non-contact' discharges; it does not cover discharges of antifreeze or other chemical discharges.

In order to be eligible for coverage under this general permit, the discharge flow volume must be no greater than five (5) percent of the critical low flow in the receiving stream, which results in a dilution ratio of at least 20 to 1. Experience has shown that discharges of non-contact cooling water which meet this criterion, have no significant thermal effect on aquatic life, and Ohio surface water temperature standards will be maintained. This eligibility requirement does not apply to discharges consisting only of geothermal water, as specific limitations have been developed to avoid thermal impacts. Non-contact cooling water must be free from contaminants (other than heat), and must not come into contact with wastewater potentially containing pollutants.

The following types of discharges are not eligible for coverage under this general permit:

- Except when treatment additives are authorized through Director's Final Findings and Orders: cooling water containing metals, ammonia, organic chemicals, or total dissolved solids in concentrations that exceed the natural background conditions of the receiving stream;
- discharges that are mixed with any other discharges that are not non-contact cooling water, except industrial storm water when authorized separately by a storm water general permit;
- discharges for which the Director requests an individual permit application;

- wastewater discharges associated with non-contact cooling water that the Director has determined to have the reasonable potential to cause or contribute to an exceedance of Ohio Water Quality Standards;
- cooling tower blowdown, boiler blowdown, and air compressor condensate, each of which may be contaminated with pollutants;
- Non-contact cooling water discharges, except for geothermal discharges, that are greater than 5 percent of the seven-day, ten-year low flow (7Q10) of the receiving stream;
- non-contact cooling water discharged to combined or sanitary sewer systems;
- cooling water system discharges that are not isolated from all other pipelines;
- discharges that take place within 500 yards of a surface water intake and cannot meet Ohio's public water supply standards;
- discharges to the Ohio River that cannot meet public water supply standards at the point of discharge;
- wastewater discharges in which the total concentration of volatile organic compounds is greater than 100 µg/L;
- wastewater discharges lasting more than two hours per day in which the total residual chlorine concentration is greater than 0.038 mg/L, unless de-chlorination equipment is installed;
- wastewater discharges in which the total residual oxidants concentration is greater than 0.0048 mg/L, unless de-halogenation equipment is installed;
- facilities obtaining cooling water from a surface water intake that have design intake flow rates equal to or greater than 2 MGD;
- discharges containing antifreeze chemicals or heat transfer fluids;
- geothermal system discharges that do not meet the following limits on temperature increase from the groundwater source:
 - For discharges > 5,000 gpd – no more than 10 degrees F
 - For discharges ≤ 5,000 gpd – no more than 15 degrees F
- geothermal system discharges from an aquifer connected to a natural salt deposit;
- discharges of pollutants associated with well maintenance activities or heat exchanger cleaning;
- discharges to water classified as Coldwater Habitat or Exceptional Warmwater Habitat;
- discharges to groundwater; and
- non-contact cooling water discharges containing chemicals or water treatment additives that have not been approved by Ohio EPA;

Discharges not eligible for coverage under this permit may still obtain an individual NPDES permit by submitting individual permit applications (Form 1, Form 2D or 2E, and an Antidegradation Addendum).

III. Procedures for Participation in the Formulation of Final Determinations

The draft action shall be issued as a final action unless the Director revises the draft

after consideration of the record of a public meeting or written comments, or upon disapproval by the Administrator of the U.S. Environmental Protection Agency.

Within thirty days of the date of the Public Notice, any person may request or petition for a public meeting for presentation of evidence, statements or opinions. The purpose of the public meeting is to obtain additional evidence. Statements concerning the issues raised by the party requesting the meeting are invited. Evidence may be presented by the applicant, the state, or other parties, and following presentation of such evidence, other interested persons may present testimony of facts or statements of opinion.

Requests for public meetings shall be in writing and shall state the action of the Director objected to, the questions to be considered, and the reasons the action is contested. Such requests should be addressed to:

DSW Permits Processing Unit
Ohio Environmental Protection Agency
P.O. Box 1049
Columbus, Ohio 43216-1049

Interested persons are invited to submit written comments upon the discharge permit. Comments should be submitted in person or by mail no later than 30 days after the date of this Public Notice. Deliver or mail all comments to:

Ohio Environmental Protection Agency
Attention: Division of Surface Water
Permits and Compliance Section
P.O. Box 1049
Columbus, Ohio 43216-1049

The OEPA permit number and Public Notice numbers should appear on each page of any submitted comments. All comments received no later than 30 days after the date of the Public Notice will be considered.

Citizens may conduct file reviews regarding specific companies or sites. Appointments are necessary to conduct file reviews, because requests to review files have increased dramatically in recent years. The first 250 pages copied are free. For requests to copy more than 250 pages, there is a five-cent charge for each page copied. Payment is required by check or money order, made payable to Treasurer State of Ohio.

For additional information about this fact sheet or the draft permit, contact Chris Monroe, (614) 644-2007, christopher.monroe@epa.ohio.gov.

IV. Obtaining Coverage and Description of Permit Conditions

Each facility seeking coverage under this general permit must submit a Notice of Intent application (NOI). Federal regulations found in 40 CFR 122.21(a) exclude persons covered by general permits from requirements to submit an application for an individual permit.

NOI requirements are intended to establish a mechanism that can be used to establish a clear accounting of the number of permittees covered by the general permit, the identities, locations, mailing addresses, and nature of discharge.

To apply for general permit coverage, all applicants are required to complete and submit an NOI form that is available from Ohio EPA along with an application fee of \$200. The NOI application form shall be submitted through the Ohio EPA eBusiness Center Division of Surface Water NPDES Permit Application STREAMS service in the link below.

<https://ebiz.epa.ohio.gov/login.html>

Permit coverage does not become effective until the permittee receives written notification from the Director that coverage is granted.

Facilities who intend to obtain or renew coverage under the general permit shall submit an NOI form within 45 days of the effective date of the permit. Dischargers who fail to obtain coverage under the general permit and are not otherwise covered by an NPDES permit are in violation of Ohio Revised Code (ORC) 6111.

Federal regulations require that anyone discharging to a municipal separate storm sewer system (MS4) must get permission of the MS4 operator before coverage can be granted under this permit. As a result, this draft permit would require anyone discharging to any MS4 to obtain permission before coverage can be granted.

Geothermal Discharges

Facilities that are designed to discharge 100,000 gallons per day or more must submit a NOI application to apply for coverage under the general permit. Facilities who intend to obtain coverage under the general permit shall submit an NOI form within 45 days of the effective date of this permit. Facilities that begin discharging wastewater associated with geothermal systems after the effective date of this permit shall submit an NOI form within 45 days prior to commencing discharge. Dischargers who fail to obtain coverage under the general permit and are not otherwise covered by an NPDES permit are in violation of Ohio Revised Code (ORC) 6111.

Facilities that are designed to discharge less than 100,000 gallons per day are not required to submit an NOI but are bound by the conditions of the permit. Ohio EPA has determined that this threshold will require NOI submittal for most commercial applications. Requiring NOI submittal for smaller discharges would encompass private geothermal discharges, which would significantly expand the permit universe.

The exponential increase of eligible discharges would create an unnecessary burden for the Agency. Ohio EPA believes that the eligibility factors established in the permit will prevent adverse impacts from discharges below the threshold.

V. Notice of Termination

Each individual facility covered by the general permit must submit a Notice of Termination (NOT) form to terminate coverage under this permit. Permittees are to request permit coverage termination if all wastewater discharges are eliminated. Failure to submit a NOT form constitutes a violation of the permit and is a violation of ORC 6111.

VI. Significant Changes in the Non-Contact Cooling Water General Permit

A number of significant changes have been made to the general permit for non-contact cooling water, and these changes are discussed below.

Geothermal System Discharges

Due to similarities in permit applicability, Ohio EPA has decided to merge the general NPDES permits for non-contact cooling water and geothermal system discharges. Significant additions based on the geothermal general permit are outlined below.

- Inclusion of geothermal system discharge in the definition for non-contact cooling water;
- Addition of a new monitoring table for geothermal discharges exceeding 100,000 gallons per day (gpd);
- Exceptions to the discharge flow to critical stream flow ratio requirements for geothermal system discharges;
- Addition of several discharges not authorized by the permit;
- New NOI requirement for geothermal discharges of 100,000 gpd or more; and
- Additional notification requirement that requires registration with ODNR for groundwater withdrawals exceeding 100,000 gpd.

General Effluent Limitations

New limits have been included for total residual oxidants, which are applicable when using treatment additives that contain bromine.

Supplementary Information

The following changes have been made to the information to be submitted with the NOI:

- Addition of an analytical result for total phosphorus;
- Addition of dissolved solids sampling to the requirements applicable when obtaining water from groundwater sources;
- Updated discharge monitoring requirement for total residual chlorine and/or

- total residual oxidants for all applicants; and
- Updated temperature data requirement, to be submitted only when available.

VII. Guidance for Applicability

This section is intended to provide guidance for entities in determining the applicability of their discharge to be covered under the non-contact cooling water general permit. Coverage under this permit requires that the wastewater is uncontaminated, which is further explained below.

Common Contaminants

As explained in the definition of non-contact cooling water in Part VI of the general permit, the permittee must ensure that the cooling water being used is free from metals, ammonia, organics, and total dissolved solids in order to meet the requirement of an uncontaminated discharge. These pollutants are of concern because they may result in toxicity and oxygen demand in the receiving stream. If the applicant is unsure with regard to the presence or concentration of pollutants in the source water or the final discharge, inexpensive tests can be used to make this determination.

Testing for Contaminants

A test for chemical oxygen demand (COD) will show the level of organics and certain inorganics (such as sulfides, sulfites, ferrous iron, chlorides, and nitrites) amenable to chemical oxidation. An organic carbon determination in a total organic carbon (TOC) analysis can also be helpful to identify the level of pollutants in source water. If the cooling water effluent shows a COD value exceeding 50 mg/L and a TOC value exceeding 20 mg/L, it is suggested that entities investigate the source water to reduce the level of contaminants, or apply for coverage under an individual NPDES permit.

Low Flow Rate of Receiving Stream

Eligibility for coverage under this general permit includes the requirement that the total discharge from the facility is less than five percent of the critical low flow (or 7Q10 flow) of the receiving stream, with the exception of geothermal system discharges. Ohio EPA can provide assistance in determining the 7Q10 flow applicable to a discharge, if necessary.

Cooling Tower Blowdown, Boiler Blowdown, and Condensate

While these types of discharges are closely related to non-contact cooling water, they are not covered under this general permit due to the likelihood of contamination. Cooling tower blowdown is routinely mixed with additives which contain pollutants, boiler blowdown often contains high levels of total dissolved solids, and air compressor condensate is frequently contaminated with oil.

A copy of the draft permit is available on the Ohio EPA, Division of Surface Water website:

https://epa.ohio.gov/dsw/permits/GP_NonContactCoolingWater