Use of Cationic Chemicals

This document provides instructions and minimum permit requirements for construction operators requesting permission to use cationic treatment chemicals at a site.

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As stated in Part 2.1.3.3 of the permit, if you are seeking to obtain coverage under this permit and you plan to use cationic treatment chemicals at your construction site, you must first seek approval under the process outlined in this document. If your request is approved, you will be authorized to use cationic chemicals, provided you comply with the requirements in Part 2.1 of this document, and any additional site-specific requirements EPA considers necessary to be protective of surface water quality (see Part 2.2 of the permit).

Cationic treatment chemicals are polymers, flocculants, or other chemicals that contain an overall positive charge. Among other things, they are used to reduce turbidity in stormwater discharges by chemically bonding to the overall negative charge of suspended silts and other soil materials and causing them to bind together and settle out. Common examples of cationic treatment chemicals are chitosan and cationic PAM.

1 Instructions for Requesting Approval for Use of Cationic Chemicals

If you intend to use cationic treatment chemicals during construction, you must first seek approval from EPA in accordance with the following steps. **Please note that Step 1 and Step 2 must be completed prior to submitting your NOI**.

1.1 Step 1 – Provide Additional SWPPP Documentation

Like all site operators, you will be required to develop and complete a SWPPP prior to submitting your NOI for coverage under the permit. However, because you intend to use cationic chemicals at your site, you are required to supplement the SWPPP with information that supports your use of these specific chemicals. In addition to the requirements in Part 7 of the permit regarding the development of a SWPPP, and more specifically to supplement the information required in Part 7.2.10.2, you are required to inlcude the following additional documentation in your SWPPP and to submit the information described herein to EPA as your application for chemical treatment:

1.1.1 Basis for use of cationic treatment chemical. The following information to support your use of cationic treatment chemicals:

a. An explanation of why the use of cationic treatment chemical is necessary at your site; and

b. Information to support why the particular chemicals chosen are appropriate for use in light of 1. the specific soils present at your site and 2. the background levels of pH and turbidity in the receiving water(s). Background pH and turbidity levels are considered, for the purposes of this permit, to be based on the levels found in the receiving water during dry weather conditions. Qualifying data for determining your background levels of pH and turbidity includes information from a peer-reviewed publication or a local, state, or federal government publication, or the results of samples you collect yourself of ambient pH and turbidity levels in the receiving water during dry weather conditions. For further instructions on providing data that qualifies as adequate for this requirement, refer to Attachment 1, at the end of of this document.

Example: If a specific chemical has been selected based on tests that you have had done on the soils that are present at your site, you should include this information as supporting documentation.

1.1.2 **Specific chemical information.** The following information related to each of the cationic chemicals that will be used at your site:

a. A listing of all cationic treatment chemicals to be used at your site;

b. Copies of Material Safety Data Sheets (MSDS) for each cationic chemical listed in (a), above;

c. Toxicity data for each cationic chemical listed in (a), above. This includes data provided by the supplier/provider of the chemical to be used;

d. Jar test results for each cationic chemical listed in (a), above;

e. Manufacturer specifications regarding the use or recommended dosage levels of each cationic chemical listed in (a), above; and

f. Other chemical product information that will assist EPA in evaluating the use of these chemicals.

1.1.3 **Site map.** Submit a map with the following information related to your use of cationic treatment chemicals:

a. Locations where cationic treatment chemicals will be applied and stored on site;

b. Point(s) of discharge;

c. Areas of earth disturbance; and

d. Soil types.

1.1.4 **Schematic drawings.** Schematic drawings showing the design of the chemical treatment systems *(e.g., chitosan-enhanced sand infiltration system, passive treatment systems)* to be used at the site. For examples of systems, the Washington State list of Approved Construction Treatment Technologies at http://www.ecy.wa.gov/programs/wq/stormwater/newtech/construction.html may be useful. A contingency plan for failure to meet discharge quality requirements must be included in every SWPPP; the plan must immediately correct the situation. The operation and maintenance manual must include contingency

plan measures and must be available on-site. The system is expected to have the capacity to hold water for testing and to re-treat water that does not meet water quality standards.

1.1.5 Responsible personnel. A list of personnel who will be responsible for operating the chemical treatment systems, application of the chemicals, and for compliance with any permit requirements specific to the use of cationic treatment chemicals. Cite the training that the personnel have received in operation and maintenance of the treatment system(s) and use of the specific chemical(s) proposed.
The system shall only be operated by a trained technician. The technician must have the following minimum training requirements:

- Fundamental knowledge of high-pressure sand filter systems.
- Fundamental knowledge of water pumping and piping systems.
- Fundamental knowledge of stormwater discharge regulations for applicable region/locale.
- Fundamental knowledge of stormwater quality testing procedures and methods for parameters applicable to the region/locale.
- Stormwater treatment chemistry (chitosan, pH, coagulation, filtration, etc.)
- Stormwater treatability (how to do jar testing)
- Treatment system components and their operation
- Treatment system operation
- Troubleshooting
- Operating the treatment system
- Entering data in the system operations log
- Testing turbidity and pH
- Optimizing dose rate
- Water quality sampling and testing (turbidity and pH)
- Residual Chemical Testing

1.1.6 Sampling and record keeping schedules. For examples of schedules the Washington State list of Approved Construction Treatment Technologies at http://www.ecy.wa.gov/programs/wq/stormwater/newtech/construction.html may be useful. Include estimated treatment period start and end dates.

1.1.7 Notification of Tribal Government. If the discharge is to tribal waters, include your notification of this proposed use of chemical treatment to the appropriate tribal government.

Remember that Step 1 and Step 2 must be completed prior to submitting your NOI.

1.2 Step 2 – Submit All Step 1 Documentation to the EPA Regional Office

Once you have compiled all of the documentation required in Step 1, you must submit it to the applicable EPA Regional Office, by registered mail or email so that the information arrives at EPA no later than the date that you submit your NOI. Failure to provide all of this information could result in a delay in processing your request or in EPA rejecting your NOI and requiring that a new NOI be submitted once you have satisfactorily submitted all required documentation.

EPA Region 10
Construction Stormwater Permit
1200 6th Avenue Ste 900, OWW-130
Seattle, WA 98101

At any time during the review period, any of the following may occur:

1.2.1 You are notified by EPA that you will be provided coverage under this permit for your discharge of construction stormwater, as well as for your use of cationic treatment chemicals. Your coverage under the permit will be subject to the requirements in Part 2.1 and potentially additional site-specific requirements resulting from EPA's review; or

1.2.2 You are notified that the information you submitted to EPA in advance of your NOI pursuant to Step 1 of this Appendix is not complete or is inaccurate, in which case you will be provided with an opportunity to supplement the submitted information as required; or

1.2.3 You are notified that EPA needs to extend review of your intended use of cationic treatment chemicals, at which time you will be provided an opportunity to withdraw your request to use such chemicals so that your construction site may proceed to submit an NOI for coverage under the permit without the use of cationic treatment chemicals; or

1.2.4 You are notified, pursuant to Part 1.7.5 of the permit, by EPA that you are not covered under the general permit, and that you must either apply for and/or obtain coverage under an individual NPDES permit or an alternate general NPDES permit.

Note that if you have been approved for use of cationic treatment chemicals under this permit, the authorization is limited to the types of chemicals you had notified EPA you intended to use. If after such approval, you decide that a new cationic chemical or a new or modified chemical treatment system is needed, you must repeat Steps 1 thru 3 before you are authorized to use the chemical at your site.

1.3 Step 3 – Submit NOI to EPA

After you have received authorization from the EPA Regional Office, you may submit your NOI to EPA.

1.4 Deciding to Use Cationic Treatment Chemicals After Permit Coverage

If at the time you received coverage under this permit, you had no plans to use cationic treatment chemicals at your site, but you have since determined that you will need to use such chemicals, you are not authorized to use such chemicals until you have completed Steps 1 thru 3, above, and you have received approval from EPA.

2 Permit Requirements Applicable to the Use of Cationic Treatment Chemicals

If you are provided coverage under the CGP and approved for the use of cationic treatment chemicals, you will be subject to the minimum requirements that apply to the use of any treatment chemical at Part 2.1.3.3 and the requirement that there be no discharge of detectable levels of cationic chemicals. You may also be subject to additional requirements for the use of cationic treatment chemicals on a case-by-case basis.

2.1 Minimum Permit Requirements

If your request to use cationic treatment chemicals is approved, you will be required to comply with the following minimum requirements:

2.1.1 All of the requirements at Part 2.1.3.3 of the permit, summarized as follows:

- **a.** Maximize use of conventional pretreatment controls so that amount of chemical used is minimized;
- **b.** Select chemicals based on soil types;
- **c.** Store chemicals in leak-proof containers kept under storm-resistant cover;
- **d.** Comply with applicable state/local requirements;
- **e.** Apply chemicals and operate treatment systems in accordance with manufacturer specifications related to water quality;
- **f.** Ensure personnel have received product-specific training; and
- **g.** Document in SWPPP all chemicals to be used, treatment systems, location where chemical will be applied and stored; and

2.1.2 The discharge of stormwater must contain no detectable levels of cationic chemicals.

2.2 Additional Permit Requirements

In addition, on a case-by-case basis, EPA may determine that it is necessary for you to comply with additional site-specific requirements. Examples of the types of requirements that you may be subject to include, but are not limited to, the following:

- Specific training requirements geared towards specific cationic treatment chemicals to be used;
- Specific inspection requirements related to the locations where chemicals are used and stored;
- Maximum dosage rates based on jar test information submitted, other state NPDES permit requirements, and/or manufacturer information;
- Requirement to periodically recalculate the optimal dosage rate based on influent and effluent monitoring of pH and turbidity;
- Requirements related to the use of specific conventional pretreatment controls;
- Aquatic toxicity testing and applicable reporting, recordkeeping, and corrective action requirements; and
- Residual chemical testing and applicable reporting, recordkeeping, and corrective action requirements.

ATTACHMENT 1 – QUALIFYING BACKGROUND TURBIDITY AND pH DATA

To satisfy the submittal requirement in Part 1.1, your data should adhere to the following instructions:

For Use of Published Data:

You may use data from a peer-reviewed publication or a local, state, or federal government publication to determine background levels of pH and turbidity if your site discharges within 5 miles downstream of the sampling location where the data was derived. For the purpose of this permit, your background levels for pH and turbidity must be based on the average of at least three of the most recent years of data. One possible source for determining your background levels of pH and turbidity is data from the U.S. Geological Survey's National Water Information System (NWIS), which can be accessed at http://waterdata.usgs.gov/nwis/qw. The NWIS allows you to compute daily, monthly, or annual mean time-series data for the available parameters. Note that there are a limited number of USGS stream monitoring stations across the nation, and only certain monitoring stations report data on pH and/or turbidity. Also take note the NWIS data retrieval precautions: http://waterdata.usgs.gov/nwis/qwdata?help#Data_retrievals_precautions.

For Data Based on Samples Taken by the Operator:

If you will be conducting sampling to determine your background pH and turbidity, you must conduct sampling during dry weather conditions of all surface waters to which your site discharges, and must comply with the following procedures:

For measuring turbidity:

1. *To ensure that the sample is representative of the flow conditions and other characteristics of the discharge, you must:*
    a. Avoid stirring the bottom sediments in the surface water in which samples are taken by not kicking up the sediment when walking and not disturbing the sediment with the sampling device;
    b. Hold the sampling container so that the opening faces the upstream direction of the surface water in which samples are taken;
    c. Do not overfill the sampling container; and
    d. Keep the samples free from floating debris.
2. *To ensure accurate analysis of your sample(s), you must:*
    a. Use a field-calibrated nephelometer or turbidity meter (also referred to as a "turbidimeter").
        i. To ensure proper calibration, you are required to recalibrate your nephelometer or turbidity meter prior to each day's use of the device.
        ii. You are required to maintain the nephelometer in proper operating condition. Do not subject the nephelometer to mechanical shock, extreme heat, or humidity. Prevent moisture or dust from entering and accumulating inside the nephelometer.
    b. Wear gloves to prevent contamination of the sample; and

c. Comply with additional requirements in accordance with 40 CFR Part 136 procedures and manufacturer's specifications.

For measuring pH:

1. You must follow the same procedures for sample collection as described for measuring turbidity; and
2. To ensure accurate analysis of your sample(s), you must:
   a. If you are using a "pocket pal" or color comparator, follow the manufacturer's instructions.
   b. If you are using a pH meter, you must:
      i. Rinse the electrode with deionized water;
      ii. Place the pH meter or electrode into the sample. Depress the dispenser button once to dispense electrolyte. Read and record the pH.