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Water Treatment Chemical (WTC) Notification & Review

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Outline

- What are WTCs?
- Why does DEC review WTC use?
- Permittee's Role – WTC Notification Form
- How does DEC determine if a WTC use can be authorized?

Water Treatment Chemicals

What are WTCs and why does DEC review their use?

What are WTCs?

- Water Treatment Chemicals
- Added to various processes and waste streams to perform a specific function
  - e.g., phosphorus removal, aid settling, corrosion inhibition, flocculation, odor control, sludge drying

Why do we review WTCs prior to use?

- Lack of existing/applicable water quality standards for WTCs and many WTC ingredients
- Determine if there is a toxicity concern
- Determine if effluent limits are needed for ingredients with water quality standards or guidance values

When should a permittee notify DEC of WTC use?

- In accordance with 6 NYCRR Part 750-2.9(a)(1), new or increased use and discharge of a WTC requires **prior** DEC review and authorization.
- When should a permittee submit a notification form?
  - Prior to using a new chemical
  - Prior changing the chemical or increasing the dose for an existing use
  - Prior to piloting a chemical
- DEC review is not required for
  - chemicals used in a closed system
  - discharges to municipal sewage collection systems
  - use of microorganisms added to assist the function of biological treatment systems; however, use of pathogenic, dangerous, or genetically engineered organisms is prohibited
  - chemicals whose toxicity and water quality are already protected by a permit limit, e.g., chlorine, acid or base (without additives), nutrients

Important Note: Authorize, not approve

- DEC does not maintain a list of approved chemicals
- WTC toxicity will vary at each facility due to
  - WTC dose
  - Point of addition
  - Treatment at the facility
  - Nature of the effluent
  - Dilution available

WTC Use May Not Be Authorized If

1. Notification form is incomplete, contains errors or misrepresentations
2. WTC is a biocide that is not registered in NYS
3. WTC contains phosphorus, the discharge is tributary to ponded waters or is in the Great Lakes Basin, and the permittee has not clearly demonstrated that no acceptable alternative exists (TOGS 1.2.1)
4. Proposed discharge may be toxic
5. Human health or aquatic water quality standard / guidance value may be exceeded

WTC Notification Form

SPDES Permitting of Water Treatment Chemicals (WTCs) Webpage

Includes information about

- Importance of WTC review
- Trade Secret Information
- WTC Use Requirements
- Logbook
- Annual Report
- **WTC notification form**
- Acceptable species for toxicity data
- Overview of the review process

WTC webpage and form

WTC Notification Form

Annual Reporting

Permittees that use and discharge WTCs are required to submit an annual summary using the WTC Annual Report Form (PDF), each year that they use and discharge WTCs. The permittee must summarize all WTC use for the prior calendar year, January 1 through December 31, and attach it either to the December Discharge Monitoring Report (DMR) or annual monitoring report required by the SPDES permit.

WTC Notification Form Instructions

WTC Notification Form (PDF)

The WTC Notification Form shall be submitted to spdesapp@dec.ny.gov as a pdf. All requested information must be provided, including exact chemical composition and toxicity information for the whole WTC product (i.e. not the individual ingredients). Safety Data Sheets (SDS) should be submitted with the notification form.

Toxicity Information

For surface water discharges, aquatic toxicity testing data on the full WTC formulation (i.e. whole product) is required to complete the WTC Notification Form. Toxicity data for the individual WTC ingredients is unacceptable. Submission of acute (48 or 96 hour LC50 or EC50) and/or chronic (7 day NOEC or IC25) test results for at least one vertebrate and one invertebrate species from the approved lists are required. NOECs estimated from acute 48 or 96 hr tests **do not qualify** as chronic test data and may not be reported as such. All reported test data must represent tests conducted in accordance with current EPA toxicity testing manuals for appropriate species (leaving DEC's website).

Is the form complete?

- Signed and dated by permittee and manufacturer
- Chemical composition adds to 100%
  - Proprietary or trade secret chemical compositions provided directly by manufacturer if needed
- Toxicity data for one vertebrate and one invertebrate species for **correct waterbody type**
  - If values are reported as “<” or “>”, confirm with the manufacturer that no additional toxicity data is available. DEC may not accept the form until definitive values are reported.
- Does the current permit or attached description/diagram provide enough information for the reviewer to understand the flow of the WTC through the treatment system?

WTC Review Process

Review Outline

1. Determine if WTC is toxic
   - Internal dilution (if applicable)
   - Removal
   - In-stream dilution
2. Determine if any ingredients need limits
   - WQBELs
   - TBELs

Toxicity Review

Start simple

- Assume no dilution and no removal – this is very conservative. If toxicity passes with these assumptions, authorization can proceed unless a limit is needed for an ingredient
- ✓ **Maximum** dose converted to concentration using **average** flow

7.a. WTC Daily Dosage: average lbs/day =	, maximum lbs/day =
7.b. Dosage Frequency: minutes/day =	, days/week =
8.a. Outfall Flow Rate: average MGD =	, maximum MGD =
8.b. Outfall WTC Concentration: average mg/l =	, maximum mg/l =

Completing Item 8.b. (Outfall WTC Concentration) - In general, the average mg/L should be determined by dividing the average dosage in 7a by the average flow in 8a and then dividing by 8.34; the maximum mg/L should be determined by dividing the maximum dosage in 7a by the average flow in 8a and then dividing by 8.34; however, for blowdowns which are highly intermittent or are not tributary to a treatment system or some form of equalization, it may be appropriate to factor in the information in item 9 when completing this item.

Toxicity Review: Percent Removal

- **Percent removal will vary based on treatment processes and nature of the chemical**
- Generally, removal assumptions will not exceed 90%
- More specific guidelines will be provided in the future
- DEC may consider documentation showing actual WTC degradation/removal prior to discharge

5. WTC Point of Addition -

Toxicity Review: Toxicity Data

12. WTC Toxicity Info (most sensitive species) - Attach description of endpoint for each EC50.				
12.a. Vertebrate Species	Acute LC50	Acute EC50	Chronic NOEC	Chronic IC25
Onchorhynchus mykiss	mg/l	0.02 mg/l	mg/l	mg/l
12.b. Vertebrate Species	Acute LC50	Acute EC50	Chronic NOEC	Chronic IC25
	mg/l	mg/l	mg/l	mg/l
12.c. Invertebrate Species	Acute LC50	Acute EC50	Chronic NOEC	Chronic IC25
Daphnia Magna	mg/l	2.083 mg/l	mg/l	mg/l
12.d. Invertebrate Species	Acute LC50	Acute EC50	Chronic NOEC	Chronic IC25
	mg/l	mg/l	mg/l	mg/l

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Toxicity Review: Does it pass?

Concentration of Pass Through at Max Dose (mg/L):			5.2		
Most Sensitive Species:			Oncorhynchus mykiss (rainbow trout)		
Toxic Concentration (mg/L):			0.02		
Tox Type (determines safety factor)	Acute	Tox Test	LC50		
End of Pipe					
Toxic Threshold (mg/L):	0.0002	calculation to apply safety factor			
End of Pipe Conc. (mg/L):	5.2	*Effluent may be toxic! Proceed to In Stream Analysis.*			

- If in-stream dilution is available, we will divide the end of pipe concentration by the dilution to find the in-stream concentration

➢ WTC passes (not toxic) if in-stream concentration < toxic threshold

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Are Effluent Limits Needed?

- Authorization cannot occur if an effluent limit is needed for a WTC ingredient
- If a limit is needed, DEC will issue a letter stating which ingredients need limits
- That WTC use cannot be authorized until the permittee submits a PIM for the limit and the modified permit has been issued

Review Decision

A. Authorize

B. Deny

C. Conditionally authorize

Review Decision: Conditional Authorization

- If a WTC “fails” due to toxicity, the permittee can
  - determine if a reduced dosage would suit the intended use
  - find an alternate chemical
  - may request the vendor conduct a chronic test, if acute data yielded a toxicity failure, which could increase data confidence and likelihood for a “pass” result
- If an alternate does not exist, authorization may occur contingent upon specific conditions, such as Whole Effluent Toxicity (WET) testing

WTC Annual Report

- Required each year even if not included in current permit
- SPDES inspectors will review the annual WTC usage
  - Are all WTCs in use authorized?
  - Does actual WTC usage exceed the authorized use?

Thank You

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