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| Permit Guidance 6 Final | <h1>Intake Credits/Non-contact Cooling Water</h1> | |
| | Rule reference: OAC 3745-2-06(C) and OAC 3745-33-07(A)(9) | Ohio EPA, Division of Surface Water Revision 0, July 28, 1998 |
| This internal guidance does not affect the requirements found in the referenced rule or statute. | | |

Introduction - What are intake credits?

The presence of pollutants in intake waters used for industrial cooling and processing can significantly affect wasteload allocations and NPDES permit effluent limitations in the following cases:

- When the concentration of a pollutant in the intake water is above or high in relation to the respective water quality criterion, (i.e., the background water quality is above or near the respective, most stringent water quality criterion); in these situations, limits would be set at water quality standards end-of-pipe unless the intake credit is granted, or the requirements of the reasonable potential for non-contact cooling water rule are met;
- When the pollutant is limited by categorical effluent limitations guidelines and the level of the pollutant in the intake water may interfere with attainment of NPDES permit effluent limitations based on the categorical effluent limitations guidelines; in these situations, a permit writer may grant an allowance for intake waters in the BAT calculations; or,
- When the intake water is withdrawn from one body of water and discharged to another body of water and the level of pollutant in the intake water is above or high in relation to the respective, most stringent water quality criterion of the receiving water. In these situations credits may be granted only in very specific cases. See the discussion of same-body-of-water.

If an effluent limit is adjusted due to concentrations of that pollutant in the intake water, that adjustment is called an intake credit. It's possible to give intake credits to dischargers only in certain circumstances that are described in State and federal rules. Intake credits can be granted for any pollutant, although the requirements are more rigorous for generic pollutants such as TSS, BOD or whole effluent toxicity (see discussion of generic pollutants on page 2).

There may be circumstances where pollutants in the intake of municipal water supply systems have the potential to impact development of water quality-based effluent limitations (WQBELs) for associated municipal wastewater treatment plants; however, these circumstances are not expected to be common and may be limited to instances where municipal water supplies are withdrawn from one water body (e.g., Lake Erie) and municipal wastewater effluents are discharged to another water body (e.g., Lake Erie tributary). There may be other circumstances where the presence of a pollutant in intake waters can affect NPDES permit effluent limitations; however, it is not feasible to list in this guidance document all possible

circumstances.

NPDES Regulations - Intake Credits for Technology-Based Limitations

The NPDES permit regulations at 40 CFR 122.45(g) establish conditions under which credit can be given for pollutants in the intake water when computing technology-based effluent limitations from categorical effluent limitations guidelines. Ohio EPA has experienced limited application of this regulation in administering the NPDES permit program in Ohio (TSS is the most common example). 40 CFR 122.45(g) does not apply to development of WQBELs. Ohio EPA has historically dealt with the issue of pollutants in the intake water on a site-specific basis when developing WQBELs. In the past, modeling procedures have had allowances for pollutants that have background water quality at or above applicable water quality standards; however, we have not allowed intake credits beyond this for WQBELs.

40 CFR 122.45(g)(1) provides that credit for pollutants in the intake water can be granted under two circumstances:

- (i) Applicable categorical, technology-based effluent limitations guidelines and standards specifically provide for application of the effluent limitations guidelines and standards on a net basis: or,
- (ii) The discharger demonstrates that the control system it uses or proposes to use would meet the applicable technology-based effluent limitations guidelines and standards in the absence of pollutants in the intake waters.

40 CFR 122.45(g)(2) provides that credit for generic pollutants (e.g., TSS, BOD) should not be granted unless the permittee demonstrates that the constituents of the generic measure in the discharge are essentially the same as in the intake; §122.45(g)(3) provides that credit can only be granted to the extent necessary to meet the applicable effluent limitation or standard; §122.45(g)(4) provides that credit can be granted only if the discharge is to the same body of water as the intake, unless the Director makes a specific finding that no environmental degradation will result; and, §122.45(g)(5) provides that intake credits are not applicable to discharges of raw water clarifier sludge resulting from treatment of intake water.

If the discharger can demonstrate that they meet the above conditions for technology-based limits, permits may express limits as “net” if there are no WQS for the parameter (TSS, for example), or if limits elsewhere in the permit protect against exceedances of WQS.

Until the final GLWQG was promulgated by U.S. EPA in March 1995, there were no federal permit regulations dealing with consideration of pollutants in the intake water when establishing WQBELs. The GLWQG provides specific guidance for considering pollutants in the intake waters both when assessing reasonable potential and when establishing WQBELs.

New GLWQG Rule - Intake Credits for WQBELs

Intake credit provisions are an important part of the GLWQG rules because the reasonable potential procedures don't distinguish between sources of pollutants when determining the need for limits. Without intake credits, the rules would require a discharger to be responsible for pollutants already in upstream waters because the reasonable potential rules focus only on effluent discharges.

Under the GLWQG rules dischargers can get intake credits for pollutants limited by WQBELs. Provisions for these credits appear in the WQS implementation rules (intake credits - OAC 3745-2-06(C)), and in the permit rules (Reasonable Potential for Non-Contact Cooling Water - OAC 3745-33-07(A)(9)). The NCCW rules are a special case of intake credits. Procedures are streamlined for once-through NCCW, with no limits allowed unless pollutants are added, or unless the NCCW contributes to a stream impact. Dischargers may still go through the intake credit demonstration if the NCCW rule does not apply. The process for working through these rules are in the attached flowchart.

Since the NCCW rule is a special, streamlined case of intake credits, it makes sense to begin any assessment there if NCCW is part of the discharge. Remember that the water must be taken in from the same body of water that it is discharged to. The NCCW rule applies only to once-through cooling waters and no formal application is needed. Note that we can not impose effluent limits for once-through cooling water unless one of the factors from OAC 3745-33-07(A)(9)(a)(I)-(vi) allows us to.

These factors allow us to regulate pollutants that are contributing to use impairment (as measured by biosurvey or toxicity data), pollutants that are added by a facility or concentrated by a facility to the point where reasonable potential occurs, or pollutants that are altered by a facility in a way that results in instream impacts (e.g. ammonia heated to the point where it becomes toxic).

There are several sources of data needed to assess whether these rule factors apply and limits are needed. While there are no specific data requirements (as far as number of samples) for determining reasonable potential under this provision, there needs to be an indication in the data that the pollutants in the discharge come from the intake. The discharge concentrations should be the same as the intake/upstream concentrations (i.e. statistically not different). Obviously, any available effluent data should be reviewed, along with any data on intake or upstream chemical quality. Dischargers of NCCW taken from the same body of water should be encouraged to submit intake data on their Form 2C/2E application. The intake/upstream data does not necessarily have to be intake data; instream chemistry from our field surveys can work just as well. Check with the TSD coordinator in Ecological Assessment Unit or in the district office to obtain this information. To qualify, discharges should have the same level of pollutants as the intake/upstream water.

We'll also need to look at any available biosurvey or toxicity data that would help us determine whether there is an impairment of the aquatic life use that can be traced to the discharge. The Biological and Water Quality Report for the stream segment, or 305(b) Report summary can be used to establish whether a pollutant from the discharge is contributing to a stream

impairment. We'll need to tell the modelers where this reasonable potential rule applies, so that they will not be doing wasteload allocations for pollutants unnecessarily, and having to re-do the allocation later. There should also be a statement in the fact sheet (when a fact sheet is prepared) that states that the NCCW rule applies to the discharges of certain pollutants at certain outfalls.

If the discharge concentrations are higher than the intake/upstream concentrations, the wasteload allocation and reasonable potential rules apply to the discharge.

For discharges consisting only of NCCW, the requirements are straight-forward: If evidence shows that one of the six causes for limits exist, all of the standard reasonable potential requirements apply for that pollutant. If we have no evidence that one of the six causes exists, then we can not require limits. Note that under OAC 3745-33-07(A)(9)(a)(viii), we can require any permit monitoring necessary to confirm or investigate whether the rule applies.

An example illustrates how this works:

| | Average | Maximum |
|-----------------------|----------|---------|
| Copper WLA | 12 ug/l | 20 ug/l |
| Copper Background | 12 ug/l | -- |
| Copper Effluent Conc. | <15 ug/l | 20 ug/l |

This is a NCCW outfall where intake and discharge are both the Ohio River. In this case the WLA happens to be the same as background because the background concentration exactly equals WQS. The effluent data is not greatly different from background, although there were only two data points. (Note that we used measured effluent data here, rather than PEQ, because the small data set causes PEQ to be increased by an uncertainty factor.) Based on this data, and district knowledge of the discharge, we determined that there was no cause under the rules to limit the discharge, and therefore no limits were applied. Quarterly monitoring for copper may be required to confirm this conclusion.

If a significant number of effluent samples indicated that the intake and discharge were significantly different, then limits would be required. For example, if the maximum effluent concentration had been 30 or 40 ug/l, then we may have had to require a WQBEL limit and a compliance schedule. The discharger would have time during the compliance schedule to gather data to show that the intake and effluent concentrations were actually the same, or to fix cooling water system leaks that caused the pollutant to be present at concentrations greater than the intake.

For discharges that contain storm and/or process water with the NCCW, the assessment is only a little more complicated. First, the NCCW rule applies to the NCCW portion of the discharge. We would assess this independently of the other wastestreams in the same way that we would a discharge that was all NCCW. If the discharge didn't trigger one of the six

causes for limits, then we could not require limits for the NCCW portion of the wastestream. You don't necessarily need data on the NCCW stream to make this determination. Data on intake, effluent and process/storm water discharges may enable you to do this assessment. For example, if concentrations in the intake, effluent and process are the same, it should be possible to argue that there is no addition of the pollutant in the NCCW.

The remaining wastestreams would get any remaining assimilative capacity. If the individual wastestreams can be practically monitored, then limits can be established for the combination of internal wastestreams. [CAUTION - we may not generally set WQBELs for individual internal wastestreams (although we may set BAT/NSPS limits on individual wastestreams). This is the result of a federal lawsuit on the GLWQG rules (a.k.a. the American Iron and Steel Institute decision). The Court told us that any WQBELs must be placed on the final discharge, or on some measure of the facility's final discharge. We consider that a calculated station limiting the sum loading from several wastestreams is a measure of the facility's final discharge.] If the discharge has only one wastestream other than NCCW, that can be WQBEL-limited as the measure of pollutants added to the discharge. In this situation, you should require permit monitoring of the NCCW stream to verify that the NCCW is not adding pollutants. Monitoring frequency should be set to get a statistically valid set of data by the next renewal (quarterly, at a minimum).

While this is the preferred way of dealing with combined wastestreams, individual wastestreams can not always be monitored (especially storm water contributions). The rules do allow us to require WQBELs at the final discharge point in these situations. We can also mix the two approaches. We can require limits on a sum of internal process discharges to cover dry-weather conditions, and add limits on the final discharge to regulate storm water contributions. You may need to compare data from the Form 2C/2E applications with similar data from Form 2F to determine whether there are significant storm water contributions.

Example #2:

| | Average | Maximum |
|-------------------|---------|----------|
| Zn Background | 40 ug/l | -- |
| Zn WLA, Tot. Rec. | -- | 189 ug/l |
| Zn WLA, w/DMT | -- | 419 ug/l |
| Zn PEQ | -- | 390 ug/l |

This is an example of a discharge that contains NCCW and storm water, which can not be separately monitored. The zinc effluent concentrations appear to be higher than background for the receiving water. Using the total recoverable zinc WLA, limits would be needed. We would put these limits at the final outfall because 1) the storm water can not be separately monitored, and 2) it's not certain that the storm water or the NCCW is the source of the pollutant. If these wastestreams could be separately monitored, we could include monitoring requirements to investigate the sources of zinc, and perhaps have limits at a calculated or

internal station.

If dissolved metal translator (DMT) data exists, there would be no reasonable potential because effluent concentrations are less than the WLA. In this case we would have monitoring requirements for zinc, and any appropriate BMP/P2 narrative requirements to address storm water and NCCW leakage.

Discharges that are not NCCW need to go through the intake credit provisions to get pollutants in their intake waters considered (OAC 3745-2-06(C)). Dischargers of NCCW may also choose to go through these procedures instead of the NCCW reasonable potential process. The intake credit process is more formal than the NCCW rule. The discharger must submit a request for our review showing that the pollutants that appear to exhibit reasonable potential actually come from their intake. This demonstration is reviewed by the Central Office or district Permits staff person, depending on who is drafting the permit. Permits may contain monitoring of effluent and intake or upstream waters to verify these conditions. The permit does not need to include monitoring, but the permittee needs to be aware that intake credits and the non-contact cooling water reasonable potential procedure get revisited with every permit renewal.

There are two types of intake credits available under these rules. Both apply only when the intake comes from the same body of water that the facility discharges to. The definition of same body of water can include water from a public water supply or groundwater in some cases. See the conditions in OAC 3745-2-06(C)(1)(e-g) to find the specific same body of water requirements. Also, the rules state that WLAs must be conducted for all pollutants for which an intake credit is requested. As a result, models may need more than one scenario to address conditions where an intake credit would, and would not, apply.

The first type of intake credit is called a “no increase” credit. These work much like the NCCW reasonable potential procedures, and are found in OAC 3745-2-06(C)(1)(b-d). Under these provisions the discharger must show that it draws 100% of its intake water from the same body of water, does not contribute any additional mass of the pollutant, does not increase the concentration of the pollutant to the point where it contributes to an excursion of WQS, does not alter the pollutant in a way that would cause adverse water quality impacts to occur, and does not cause an adverse water quality impact by the timing and location of the discharge.

This credit must be requested by the discharger, and they need to demonstrate that the rule requirements are met. Minimum data submission requirements:

10 samples each of intake and effluent for the pollutant, with intake and effluent samples taken on the same day, or one detention time apart, whichever is appropriate (The discharger should discuss this with the district staff before doing sampling).

We (and the discharger) should check influent results against any ambient monitoring to check both data accuracy and any concentration of the pollutant by recirculation in the stream. If the “no increase” credit is justified, then the permit needs to include only monitoring necessary to verify the on-going applicability of the credit.

The fact sheet or statement of basis must include a specific determination that no reasonable potential exists for the pollutant (some mention must be made with the public notice, even if no fact sheet is prepared). The rule also requires that a reopener clause be added to the permit to allow modifications if conditions change.

“This permit contains intake credits for ...[list pollutants] at outfall..... . This permit may be modified, or, alternatively, revoked and reissued, to contain water-quality based effluent limitations for the parameters if new information demonstrates changes in the conditions that resulted in the granting of intake credits.”

A second type of intake credit is available when the intake concentration of a pollutant exceeds the most stringent applicable WQ criterion, and if the discharger adds pollutants (that is, has a process or storm water source of the pollutant in the discharge). This “no net increase” credit provision is in OAC 3745-2-06(C)(2). The demonstration has the same data submission requirements as the “no increase” credits. All of the “no increase” credit review requirements apply, except for the no-additional-mass requirement.

You can grant credits under the “no net increase” provision up to the intake concentration of the pollutant, but you don’t have to go that high if proper operation of the treatment system results in levels that are less than the intake, but still higher than the WQS. Note that you can do an intake credit assessment for 30-day and daily maximum limits separately. For example, it may be possible to justify an intake credit for a maximum limit, but not for a 30-day limit (or vice-versa).

This type of intake credit has an expiration date of March 23, 2007 (ten years from when states were supposed to finalize their GLWQG rules). You don’t have to incorporate this date into a permit until we get to where expiration dates go beyond it. The idea of an credit expiration date is to spur states into developing TMDLs for a water body - TMDLs that would regulate upstream/ intake sources to the point where WQS would be met upstream of the discharge. A “no net increase” intake credit can be extended beyond the expiration date if it is authorized by the TMDL.

Neither the intake credit reopener clause nor the special fact sheet requirements apply to this type of intake credit; however, if a fact sheet is done, the credit should be mentioned. The reason that there is no fact sheet requirement for this type of credit is that the discharge is considered to have the reasonable potential to contribute to exceedances of WQS; the rule just doesn’t require us to act on that immediately due to the mitigating circumstance of intake pollutant levels.

Example #3:

| | Average | Maximum |
|-----------------|---------|----------|
| Lead WLA | 9 ug/l | 226 ug/l |
| Lead PEQ | 12 ug/l | 15 ug/l |
| Lead Background | 12 ug/l | -- |

This outfall contains NCCW mixed with process water. There are multiple internal sampling points for the process water, where BAT limits are required. Under the normal reasonable potential procedures the discharger would need to meet the lead WLA at the final discharge point; however, the NCCW language allows us to assess the NCCW and process waters separately. This discharge is mostly NCCW (>90% of the outfall) drawn from the Ohio River, and has the same lead concentrations as the river. The NCCW reasonable potential procedure applies to this part of the discharge, and we found no cause to apply limits. The process water gets what's left in the WLA, which in this case is nothing more than the criteria. Because WQBELs apply to the total discharge, the WQBELs apply to the combined discharge from the internal process outfalls, rather than to each individual internal outfall. We created a "calculated" outfall that contained load limits for the sum of the internal process wastestreams (that is, the sum load from the internal process wastestreams must meet the limit at the "calculated" outfall, in addition to BAT limits at each internal process outfall).

The discharge also meets the conditions of the "no net increase" intake credits described above, because the final discharge concentration is the same as background. The loading limit at the "calculated" outfall can be based on 12 ug/l (background) until March 23, 2007, when the discharge will need to meet a load based on 9 ug/l (unless the credit gets reauthorized by a TMDL).

Hopefully, permittees that draw water from the same surface water that they discharge to will be submitting intake data with their application forms. Permits staff may want to advise these dischargers to do this in case an intake credit issue arises during permit drafting. Permits staff will need to work with Modeling staff or district WQ staff to determine whether background concentrations exceed WQS.

Cross reference:

For more information contact:

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