HUMAN HEALTH CRITERIA IMPLEMENTATION SCENARIOS

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The following scenarios are intended to assist DEQ's Human Health Criteria Rulemaking Work Group as it considers implementation provisions for the human health water quality criteria. The scenarios describe a wide range of possible NPDES permit discharge circumstances.

All scenarios assume:

(1) A facility that has discharges that require an NPDES permit;

(2) The facility is employing all applicable technology-based pollutant discharge controls, such as best available technology economically achievable (BAT); and

(3) The waterbody to which the facility discharges contains toxic pollutants A, B, C, and D at background concentrations that exceed the human health criteria for those pollutants.

(a) The background concentration of pollutant A is natural.

(b) The background concentration of pollutant B is a legacy of past human activities.

(c) The background concentration of pollutant C is due to current, unregulated human sources, such as nonpoint sources and unregulated point sources (*e.g.*, precipitation runoff from unregulated residential and commercial point sources).

(d) The background concentration of pollutant D is due to current, regulated point sources other than the facility.

Scenario 1—Pure Pass Through

The facility withdraws water from the waterbody and discharges it back to the waterbody without adding pollutants A, B, C, or D and without changing the concentrations of those pollutants. Although the facility does not increase the masses or concentrations of the pollutants in the waterbody, the discharge concentrations exceed the human health criteria and are not diluted by the waterbody.[1]

[1] A variation on this scenario is a facility whose processes or controls reduce the discharge concentrations below the background concentrations, but not below the human health criteria.

Scenario 2—Concentration Increases Without Load Increases

The facility withdraws water from the waterbody and discharges it back to the waterbody without adding pollutants A, B, C, or D. The facility's use of the water, however, evaporates some of it, which causes the pollutants' discharge concentrations to exceed their background concentrations. Although the waterbody will dilute the discharge concentrations to levels that approach the background concentrations, it cannot dilute them to the human health criteria because the background concentrations already exceed the human health criteria.

Scenario 3—Pass Through Load Increases Without Concentration Increases

The facility obtains its process and noncontact cooling water from a source other than the waterbody to which it discharges. In addition, precipitation runoff enters the facility from other properties. Both the facility's intake water and the runoff entering the facility contain pollutants A, B, C, and D in concentrations that exceed the human health criteria for those pollutants but are less than or equal to the background concentrations in the waterbody. The facility does not add pollutants A, B, C, or D or change their concentrations before discharging its process and noncontact cooling water and precipitation runoff to the waterbody. By passing through these pollutants, the facility will: (1) discharge the pollutants at concentrations exceeding their respective human health criteria; (2) increase the loading of the pollutants to the waterbody; but (3) either reduce or have no effect on the concentrations of the pollutants in the waterbody.

Scenario 4—Pass Through Load and Concentration Increases

The facility obtains its process and noncontact cooling water from a source other than the waterbody to which it discharges. In addition, precipitation runoff enters the facility from other properties. Both the facility's intake water and the runoff entering the facility contain pollutants A, B, C, and D in concentrations that exceed both the human health criteria for those pollutants and the background concentrations in the waterbody. The facility does not add pollutants A, B, C, or D or change their concentrations before discharging its process and noncontact cooling water and precipitation runoff to the waterbody. By passing through these pollutants, the facility will: (1) discharge the pollutants at concentrations exceeding their respective human health criteria; (2) increase the loading of the pollutants to the waterbody; and (3) increase the concentrations of the pollutants in the waterbody.

Scenario 5—Facility-Generated Load Increases Without Concentration Increases

The facility's equipment and activities add pollutants A, B, C, and D to its process wastewater, noncontact cooling water, and stormwater discharges. The pollutant discharge concentrations are less than or equal to the background concentrations in the waterbody but more than the human health criteria. The facility thereby increases the loading of the pollutants to the waterbody, but it either reduces or does not affect the pollutant concentrations in the waterbody.

Scenario 6—Facility-Generated Load and Concentration Increases

The facility's equipment and activities add pollutants A, B, C, and D to its process wastewater, noncontact cooling water, and stormwater discharges. The pollutant discharge concentrations are greater than both the background concentrations in the waterbody and the human health criteria. The facility thereby increases the loading of the pollutants to the waterbody and increases the concentration of the pollutants in the waterbody.

Scenario 7—Naturally Occurring Pollutants in Soils

The facility's soils contain natural concentrations of pollutants A, B, C, and D. These natural concentrations cause the concentrations in the facility's stormwater discharges to exceed the human health criteria for the pollutants. In Scenario 7a, the discharge concentrations are less than the background concentrations, which decrease the concentrations in the waterbody. In Scenario 7b, the discharge concentrations are greater than the background concentrations, which increase the concentrations in the waterbody.

Further Variations

I. In Scenarios 2, 4, 6, and 7b, the increases in pollutant concentrations in the waterbody are insignificant or trivial, either considered individually or cumulatively.

II. The facility is a new source rather than an existing source.

III. Each scenario is considered in the context of a "total maximum daily load" (TMDL) determination, rather than in the context of an NPDES permit decision.

IV. Background pollutant concentrations are less than the human health criteria.

V. For each scenario, the relevant criterion is an aquatic life criterion rather than a human health criterion.

VI. Combinations of scenarios.[2]

[2] The individual scenarios and variations are intended to tease out the principal issues that may be legally or biologically relevant. It may be helpful or appropriate, however, to consider some combinations of scenarios and variations.