



Note: The comment period for these rules has been extended 90 days to June 6, 2011.

Draft Rules – Surface Water Quality Water Quality Standards (OAC Chapter 3745-1)

Note: This rule package along with the 401 water quality certification and antidegradation rule packages are three of four interrelated rule packages that have been available for interested party review since the fall of 2008. The fourth rule package, stream mitigation, is now available for interested party review. The release of the stream mitigation rule package starts a 90-day comment period for all four rule packages. As part of the notice of the stream mitigation rule package, updated versions of the draft Water Quality Standards rules are being released for review and comment. This updated fact sheet outlines the updates that have been made to the draft rules. A link to each rule package is on the Division of Surface Water website at www.epa.ohio.gov/dsw/Home.aspx.

What are water quality standards?

Water quality standards are state regulations or rules that protect lakes, rivers, streams and other surface water bodies from pollution. The rules are in Chapter 3745-1 of the Ohio Administrative Code (OAC). These rules contain: beneficial use designations such as warmwater aquatic life habitat, public water supply and primary contact recreation; numeric levels and narrative statements (water quality criteria) protective of the use designations; and procedures for applying the water quality criteria to wastewater dischargers.

Water quality standards serve as: the water quality goals for water uses and cleanliness; the benchmarks to measure and report on meeting Clean Water Act goals; the water quality targets to meet when setting wastewater permit limits and total maximum daily loads.

Which water quality standards rules are under review at this time?

This rule package addresses existing rules 3745-1-01, 02, 03, 04, 07 and 31-39, and new rules 40-43. These rules define beneficial use designations and establish water quality criteria protective of the use designations.

This package represents the largest set of revisions to the system of beneficial use designations since 1985 and the largest set of revisions to water quality criteria since 2002.

This rule package does not address antidegradation, mixing zones, drainage basin-specific use designation rules or water quality standards for wetlands; those rules are being addressed in other rule packages.

Why are these rules under review?

Section 119.032 of the Ohio Revised Code (ORC) requires Ohio EPA to review its rules every five years to determine whether they should be changed. The Agency has reviewed these rules and has identified needed changes.

What changes are being considered?

Beneficial use designations

Rule changes include new beneficial use designations for aquatic life, recreation, agricultural drainage and navigation.

Water quality criteria

Rule changes include: incorporation of the national methods for calculating water quality criteria for the protection of human health; new human health criteria for about 135 chemicals; statewide application of criteria based on maximum contaminant levels; and new and revised aquatic life criteria for seven chemicals.

Attachments to this fact sheet have more information about the draft rule changes.

What updates have been made to the August 2008 draft version of the rules?

The more significant updates are mentioned below. A complete list of updates is in attachment 6 to this fact sheet.

The definitions of the recreation use designations in rule 3745-1-07 and the associated bacteria water quality criteria in rule 3745-1-41 are updated with the changes that were effective March 15, 2010. The table of class A

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primary contact recreation streams is replaced with a table that includes the upstream and downstream boundaries of the class A primary contact recreation segments.

The restrictions on open lake disposal of dredge material in Lake Erie in rule 3745-1-31 are removed. Those restrictions will be addressed in a future rulemaking.

The August 2008 draft rule 3745-1-32 incorporated the ORSANCO Pollution Control Standards by reference with a statement that they apply to the Ohio River if they are more stringent than the statewide standards. The updated draft rule replaces the reference with the actual standards that are more stringent than the statewide standards.

The human health criteria in table 40-2 of rule 3745-1-40, table 41-2 of rule 3745-1-41, and attachments 3 and 4 to this fact sheet are updated.

In rule 3745-1-42, the criteria for cadmium in table 42-3 are updated.

In rule 3745-1-43, the lake habitat criteria in table 43-12 are updated.

Who will be regulated by these rules?

Local governments and businesses that operate wastewater treatment facilities could see changes in discharge permit limits as a result of these rules.

Specific water quality criteria are associated with each beneficial use designation and are the specific target conditions to be maintained in the water bodies. Together the uses and criteria may be the basis for permit limits in wastewater discharge permits.

These rules will also affect the regulation of construction projects that place fill material in surface waters.

What additional information is the Agency seeking?

The Agency wants to hear from interested stakeholders (public, local officials, and National Pollutant Discharge Elimination System [NPDES] permit holders) who may be impacted by these rule revisions. General comments and specific factual information are welcome. The Agency is also seeking information on the costs the rule revisions would have on NPDES permit holders.

How are the amendments formatted in the draft rule?

Text being considered for deletion is struck through; new text being considered is underlined. Rules being

considered for rescission have "To Be Rescinded" at the top of the first page of the rule.

What is the rulemaking schedule?

At this time, the Agency is soliciting initial input on these draft rule revisions. Ohio EPA is required by section 121.39(D) of the Revised Code to contact potentially affected parties prior to adopting rule changes.

At the close of the draft rules comment period, the Agency will review the comments and make necessary changes to the rules. The Agency will then file proposed rules with the Joint Committee on Agency Rule Review (JCARR), the Legislative Service Commission and the Secretary of State.

At that point, a second comment period, including one or more public hearings, will be scheduled. After the close of the second comment period, the Agency will review the comments, make any necessary changes and then adopt the final rules.

Ohio EPA expects to file the proposed rules in the summer of 2011. The final rules could be adopted by the end of 2011.

How can I comment on the draft rules?

Please submit your comments in one of the following ways:

By email: dsw_rulecomments@epa.state.oh.us

By fax: (614) 644-2745

By postal mail:

Rule Coordinator

Ohio EPA, Division of Surface Water

P.O. Box 1049

Columbus, OH 43216-1049

Comments on the draft rules must be received no later than March 8, 2011.

How can I get more information?

Copies of this fact sheet and the draft rules are on the Division of Surface Water website at www.epa.ohio.gov/dsw/Home.aspx.

For more information about these draft rules, please contact:

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Attachment 1 – Summary of Draft Rule Changes

This 6-page attachment identifies the rules under review and summarizes the draft rule changes. The more significant rule changes are highlighted.

Attachment 2 – Summary of Beneficial Use Designations

This 2-page attachment lists the existing and new beneficial use designations in the draft rules. It also presents key attributes and practical impacts of each use designation.

Attachment 3 – Ohio River Basin Revisions to Human Health Criteria

Draft rule 3745-1-40 contains water quality criteria for the public water supply use designation. Those criteria protect against exposure to chemicals through the drinking and fish consumption routes. Draft rule 3745-1-41 contains chemical and bacteria water quality criteria for the recreation use designations. The chemical criteria protect against exposure to chemicals through the fish consumption route only.

This 7-page attachment compares, for the Ohio River drainage basin, the human health chemical criteria applicable to the public water supply and general water based recreation use designations. It compares the current criteria with the draft criteria updated using the methods in draft rule 3745-1-38.

Attachment 4 – Lake Erie Basin Revisions to Human Health Criteria

This 7-page attachment compares, for the Lake Erie drainage basin, the human health chemical criteria applicable to the public water supply and general water based recreation use designations. It compares the current criteria with the draft criteria updated using the methods in draft rule 3745-1-38.

Attachment 5 – Statewide Revisions to Aquatic Life Criteria

This 1-page attachment compares the draft revisions to the statewide aquatic life criteria.

Attachment 6 – Updates from August 2008 Draft Rules to March 2010 Draft Rules

This 2-page attachment describes draft changes made to the rules since they were first released in August 2008.

This rulemaking covers all of OAC 3745-1 except for antidegradation (rule 05), mixing zones (rule 06), basin-specific use designation rules (rules 08 to 30) and wetland rules (rules 50 to 54). Review of those rules will occur as parts of other rule packages.

Key points of this draft rule package are identified below. The more significant rule changes are highlighted.

Rule 01: Purpose and applicability.

Because more than 50% of the rule is being revised, existing rule 01 will be rescinded and new rule 01 will be adopted. Changes to the rule include the following.

- Purpose, objectives and goals of the water quality standards (WQS) rules are clarified.
- An overview of Chapter 3745-1 is added.

Rule 02: Definitions.

Some important additions:

- cold water fauna
- ditch maintenance program
- drought
- existing use
- historically channelized watercourse
- lake
- qualitative habitat evaluation index
- stream

Rule 03: Analytical methods and availability of documents.

- Documents newly referenced throughout OAC 3745-1 are cited.

Rule 04: Criteria applicable to all waters.

- Reference to fecal coliform criteria is deleted from the public health nuisance paragraph (F)(1).
- A condition to prevent nuisances from manure is added as paragraph (F)(2).

Rule 07: Water use designations and statewide criteria.

This rule is being split into 5 separate rules. Existing rule 07 will be rescinded and new rules 07, 40, 41, 42 and 43 will be adopted. The broad subject areas are described below.

New Rule 07: Beneficial use designations.

This new rule will continue to contain definitions of the beneficial use designations. Water quality criteria for the protection of the use designations are moved to rules 40 to 43.

- An opening paragraph is added and cross-referenced to the language of the enabling State law; i.e., WQS are intended to “enable the present and planned use of water.” This establishes a "logic model" upon which to hang the addition of the two new drainage use designations below.
- Water supply use designations are retained basically "as is".
- A new recreation use designation is added.
 - A new "General Water Based Recreation" use designation is added as paragraph (D)(2). This use will apply to all water bodies year round.
 - The Bathing Water, Primary Contact Recreation, and Secondary Contact Recreation use designations will be assigned to water bodies in addition to the General Water Based Recreation use and will continue to apply only during the recreation season.
 - The table of class A PCR streams is updated.
- Aquatic life use designations are revised.
 - A new Base Aquatic Life use designation is added as paragraph (E). This use is a new way to express that, as in the existing rules, the “baseline” chemical water quality criteria associated with the Warmwater Habitat designation apply to all "unlisted" waters of the State. “Unlisted waters” refers to the many miles of streams, creeks and ditches that are not named on maps and, therefore, are not listed in the WQS rules along with their applicable tiered use designations. The Base Aquatic Life designation and chemical criteria will apply to all waters not assigned a tiered aquatic life use. Ohio will now be like other states in that our “unlisted” waters will have a formal aquatic life use designation.
 - Common meaning definitions are added.
 - The Coldwater Habitat use designation in paragraph (F)(4) is revised. A list of cold water fauna native to Ohio waters is added as table 7-2.
 - A new use designation "Lake Habitat" is created in paragraph (F)(8) for lakes (including reservoirs).

- A new use designation "Primary Headwater Habitat" (PHWH) is created in paragraph (F)(9) for small headwater streams. This new use includes:
 - a "single" sub-category of aquatic life use (PHWH) with emphasis on the cumulative importance of headwaters in water quality;
 - classes defined and cross-referenced to the Primary Headwater methodology document and the draft stream mitigation rule (3745-1-56);
 - Class III PHWH generally equated to Coldwater Habitat - native fauna; antidegradation loss of use would apply as if it were a Coldwater Habitat sub-category of aquatic life use;
 - Class I and Class II PHWHs – These classes don't equate with any sub-category of aquatic life use; antidegradation loss of use is viewed from the hydrology and functional processes as opposed to resident aquatic life (this fits the approach of the stream mitigation rule); and
 - Modified PHWH – These are Class I and Class II PHWHs that are ditches or that have other human induced modifications.
- Two new drainage use designations – Upland Drainage and Water Conveyance – are established in paragraph (G) and linked with historically channelized watercourses (HCWCs) and the consensus viewpoints reached by the Rural Drainage Advisory Committee (RDAC)¹. Certain waters (i.e., ditches) are designated "by rule" for this use. These uses will apply in addition to any applicable aquatic life and recreation uses. There are no chemical or biological criteria associated with the Upland Drainage and Water Conveyance uses; however, the criteria for the applicable aquatic life and recreation uses will continue to apply. For both new drainage use designations, antidegradation reviews are "streamlined", a stipulation for HCWCs put in section 6111.12 of the Revised Code a number of years ago. This fits the "logic model" that petition ditches are maintained under other State laws to enable the removal of excess water from private and public property.
- A new beneficial use – Navigation – is established in paragraph (H) using broad language found in U.S. EPA guidance and the WQS of other states. This completes the "logic model" of identifying present and planned use of waters for those waters that support commercial shipping. A list of the 17 water bodies assigned the Navigation use designation is added to the rule as table 7-3. Just as for the new drainage use designations, the Navigation use will apply in addition to any applicable aquatic life and recreation uses.

Rule 31: Lake Erie standards.

- Minor administrative changes only.

¹ The RDAC was created through efforts of the Ohio Federation of Soil and Water Conservation Districts and Ohio DNR, Division of Soil and Water Conservation in 2006. This broad based committee was formed to recommend means to better support construction and maintenance of drainageway systems, and to achieve a high level of environmental stewardship in drainage programs and projects (from the RDAC report dated 2008).

Rule 32: Ohio river standards.

- Existing rule 32 includes tables of water quality criteria that are combinations of Ohio and ORSANCO (Ohio River Valley Water Sanitation Commission) water quality criteria. The existing rule is being rescinded and replaced with new rule 32 that identifies applicable use designations and incorporates the criteria from the ORSANCO "Pollution Control Standards for discharges to the Ohio River" that are more stringent than the criteria for those use designations.

Rule 33: Water quality criteria for the lake Erie drainage basin.

Rule 34: Water quality criteria for the Ohio river drainage basin.

- With the adoption of federal Water Quality Guidance for the Great Lakes System (Great Lakes Initiative or GLI) provisions in 1997, the human health water quality criteria and procedures for the Lake Erie basin differed from the national criteria that were kept for the Ohio River basin. These two rules were created at that time to identify the applicable human health and wildlife criteria. In 2000, USEPA published revised human health criteria procedures very similar to the GLI procedures. Therefore, these two rules are being rescinded and the human health criteria are being updated and moved to new rules 40 and 41. The wildlife criteria are being moved to rule 42.

Rule 35: Site-specific modifications to criteria and values.

- Minor administrative changes only.

Rule 36: Methodologies for development of aquatic life criteria and values.

- Minor administrative changes only.

Rule 37: Methodology for deriving bioaccumulation factors.

Rule 38: Methodologies for development of human health criteria and values.

- These two rules currently incorporate the GLI methodologies applicable to the Lake Erie basin. A reference to the U.S. EPA national methodology is added to each draft rule and will apply statewide. However, pursuant to federal regulations (40 CFR 132) the GLI methodologies must be retained and applied to the Lake Erie basin if they result in more restrictive criteria.

Rule 39: Methodology for the development of wildlife criteria for the lake Erie drainage basin.

- This rule incorporates the GLI methodologies applicable to the Lake Erie basin; there is no national methodology. Only minor administrative changes are made to this rule.

New Rule 40: Water quality criteria for water supply use designations.

This new rule contains the water quality criteria for the water supply designations.

- The human health "drinking" criteria, currently in Rules 33 and 34, are included in this new rule with the following changes.
 - Maximum contaminant levels (MCLs) developed under the Safe Drinking Water Act are updated in table 40-1 and applied statewide (current rules apply those levels only within the Ohio River basin).
 - Ambient water quality criteria (AWQC) developed under the Clean Water Act are updated and included as table 40-2. Only those chemicals required under 40 CFR 132 to be in rule are listed in that table. For all other chemicals, the procedures in rule 38 will be used to calculate and update criteria on an as-needed basis. Those criteria will be made available on the Ohio EPA web page www.epa.ohio.gov/dsw/wqs/criteria.aspx. By not adopting the criteria in rule, Ohio EPA is able to consider the most recent scientific information when regulating discharges of those chemicals.
- The agricultural water supply criteria that were removed from rule 07 are in table 40-3 of this new rule.

New Rule 41: Water quality criteria for recreation use designations.

This new rule contains the water quality criteria for the recreation use designations.

- The current aesthetic criteria for MBAS, oil & grease and phosphorus, removed from rule 07, are in table 41-1.
- Updated human health "nondrinking" criteria, removed from rules 33 and 34, are in table 41-2. Only those chemicals required under 40 CFR 132 to be in rule are listed in that table. For all other chemicals, the procedures in rule 38 will be used to calculate and update criteria on an as-needed basis. Those criteria will be made available on the Ohio EPA web page www.epa.ohio.gov/dsw/wqs/criteria.aspx. By not adopting the criteria in rule, Ohio EPA is able to consider the most recent scientific information when regulating discharges of those chemicals.
- The bacteria criteria that were adopted in rule 07 on December 15, 2009 are moved to table 41-3.

New Rule 42: Water quality criteria for the base aquatic life use designation.

This new rule contains the wildlife criteria from rules 33 and 34 and the Warmwater Habitat chemical criteria removed from rule 07, with updated or new criteria for the following chemicals:

- cadmium
- diazinon
- tributyltin
- chloride
- lead
- chlorpyrifos
- nonylphenol

New Rule 43: Water quality criteria for the tiered aquatic life use designations.

This new rule contains the biological criteria and the chemical criteria that apply to the ten tiered aquatic life use designations (Warmwater Habitat, Exceptional Warmwater Habitat, Modified Warmwater Habitat, etc.) over and above the base aquatic life use criteria in rule 42. Changes to the criteria, removed from rule 07, include the following.

- **Changes to the biological criteria.**
 - In paragraph (B)(4)(b), the new rule limits application of the biological criteria in periods of stream desiccation.
 - In paragraph (B)(4)(c), the new rule limits application of the biological criteria to a point where the watershed area falls below 2 threshold values:
 - 3.1 sq. mi. if an HCWC; and
 - 1.0 sq. mi. all other streams.
 - The watershed area limit does not apply if:
 - there are biological data that can be used in a UAA; and
 - an aquatic life use sub-category is designated in rule (protection of existing use also applies based on the biology).
 - Paragraph (B)(4)(d)(ii) references new language in paragraph (B)(3) that addresses independent application of biological criteria.
 - Paragraph (B)(4)(e) clarifies actions of the director when biological criteria are not attained.
 - The biological criteria are presented in a new format in tables 43-1, 43-2 and 43-5. (Existing rule 07 includes the biological criteria in one table).
- **Water quality criteria for lakes, including new criteria for nutrients,** are in table 43-13.

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 Fact Sheet **Attachment 2: Summary of Beneficial Use Designations**
 (See draft rule 3745-1-07)

Ohio EPA
 Division of Surface Water

New use designations are in blue font.

Beneficial Use Designation	Key Attributes, or why a water would be designated the beneficial use	Practical Impacts (comparisons to Warmwater Habitat baseline)
Aquatic Life - All surface waters of the state will be assigned one or more aquatic life use designations.		
Coldwater Habitat	native cold water or cool water species; put-and-take trout stocking	more stringent ammonia, cyanide, dissolved oxygen, phenol, pH, silver, and temperature criteria; no biological criteria; may result in additional wastewater treatment requirements
Exceptional Warmwater Habitat	unique and diverse assemblage of fish and invertebrates	more stringent ammonia, dissolved oxygen, pH, temperature, and biological criteria; may result in additional wastewater treatment requirements
Lake Habitat	natural or constructed pooled or impounded waters, excluding Lake Erie	more stringent ammonia, dissolved oxygen, pH, and temperature criteria; includes chlorophyll, nitrogen, phosphorus and secchi disk criteria; no biological criteria; may result in additional wastewater treatment requirements
Seasonal Salmonid Habitat	supports lake run steelhead trout fisheries; applies only from October 1 to May 31; these waters are also designated WWH, EWH or CWH	more stringent ammonia, phenol, and silver criteria; no biological criteria; slightly more restrictive chlorine disinfection practices
Warmwater Habitat	typical assemblages of fish and invertebrates, similar to least impacted reference conditions	baseline regulatory requirements in line with Clean Water Act "fishable goal" expectations
Base Aquatic Life	all waters not designated a tiered aquatic life use	baseline regulatory requirements in line with Clean Water Act "fishable goal" expectations; no biological criteria
Wetland	3 categories (1, 2 and 3); areas saturated by water; includes swamps, marshes, bogs and other saturated areas	additional narrative criteria; no biological criteria
Primary Headwater Habitat	3 classes (I, II and III); springs, seeps and streams too small meet WWH biological criteria	criteria for class I and class II are the same as the Base Aquatic Life use; criteria for class III are the same as the Coldwater Habitat use
Limited Warmwater Habitat	temporary designations based on 1978 WQS and not subjected to use attainability analysis; being phased out	exempt from TDS criteria and may also be exempt from pH, iron and zinc criteria as well
Modified Warmwater Habitat	tolerant assemblages of fish and macro-invertebrates, but otherwise similar to WWH; irretrievable condition precludes complete recovery to reference condition	less stringent ammonia, dissolved oxygen, and biological criteria; may result in less restrictive wastewater treatment requirements
Limited Resource Waters	fish and macroinvertebrates severely limited by physical habitat or other irretrievable condition	less restrictive aquatic life criteria for majority of pollutants; may result in less restrictive wastewater treatment requirements

Fact Sheet Attachment 2: Summary of Beneficial Use Designations

Beneficial Use Designation	Key Attributes, or why a water would be designated the beneficial use	Practical Impacts
Recreation - all surface waters of the state will be assigned the General Water Based Recreation use and one other recreation use.		
General Water Based Recreation	all waters for the protection of visual aesthetic qualities and the protection against risks associated with eating sport caught fish	visual aesthetic criteria for foaming agents, oil & grease, and phosphorus; updates to human health "nondrinking" criteria
Bathing Waters	bathing beach with lifeguards/bath house; greatest potential exposure to bacteria	lowest risk of swimmer's illness after exposure; greater disinfection of wastewater
Primary Contact Recreation	3 classes (A, B and C) determined by amount of usage; class A for highly used waters; class C for small channelized waters; class B for all other waters; intermediate potential exposure to bacteria	intermediate risk of swimmer's illness after exposure; baseline level of disinfection
Secondary Contact Recreation	waters with limited access; lowest potential exposure to bacteria	greatest risk of swimmer's illness after exposure; slightly less disinfection of wastewater
Water Supply		
Public Water Supply	all waters within 500 yards of a surface water intake for a public water system, all publicly owned lakes and reservoirs, all privately owned lakes and reservoirs used as a drinking water source, all emergency water supplies	maintain or improve potable water supplies, reduce water treatment costs; upstream dischargers may face more stringent limits in order to meet PWS criteria near point of water withdrawal; includes updates to human health "drinking" criteria and statewide application of MCLs in waters near drinking water intakes
Agricultural Water Supply	all waters unless removed through a use attainability analysis - to protect for livestock watering and/or irrigation	limited impact; as a practical matter other standards are generally protective of this use, except for a limited number of heavy metals in unique situations
Industrial Water Supply	all waters unless removed through a use attainability analysis - to protect for industrial purposes	no impact; no water quality criteria in rule; criteria may be established on case-specific basis but as a practical matter this has never been needed because other standards are protective of this use.
Drainage		
Upland drainage	small waters constructed in upland areas to drain excess water	abbreviated antidegradation review; no water quality criteria
Water conveyance	larger waters constructed or modified to convey excess water	abbreviated antidegradation review; no water quality criteria
Navigation		
Navigation	17 listed waters that are periodically dredged to support commercial navigation or recreational boating	no impact on wastewater dischargers; no water quality criteria

December 2010 Draft Water Quality Standards Rules (OAC 3745-1)
 Fact Sheet **Attachment 3: Ohio River Basin Revisions to Human Health Criteria** (See draft rules 3745-1-38, 40 and 41)

Ohio EPA
 Division of Surface Water

Chemical	Draft Human Health (µg/l)		Current Human Health (µg/l)	
	Drink	Nondrink	Drink	Nondrink
Acenaphthene	140	230	1,200	2,700
Acetophenone	970	110,000	--	--
Acrolein	1.2	1.9	320	780
Acrylamide	0.68 ^c	64 ^c	--	--
Acrylonitrile	0.54 ^c	3.2 ^c	0.59 ^c	6.6 ^c
Alachlor	69 ^a	7,900	2.0 ^b	--
Aldicarb ¹	6.9	800	7.0 ^b	--
Aldrin	3.2E-06 ^c	3.2E-06 ^c	0.0013 ^c	0.0014 ^c
Aluminum - TR	5,300	22,000	--	--
Aniline	47	1,300	--	--
Anthracene	140	150	9,600	110,000
Antimony - TR	4.9	560	6.0 ^b	4,300
Arsenic - TR	0.23 ^c	27 ^c	10 ^b	--
Asbestos	a	--	7.0 Mf/l ^b	--
Atrazine	230 ^a	3,800	3.0 ^b	--
Barium	1,500	170,000	2,000 ^b	--
Benzene	6.2 ^{a,c}	200 ^c	5.0 ^{b,c}	710 ^c
Benzidine	0.00092 ^c	0.0023 ^c	0.0012 ^c	0.0054 ^c
Benzo(a)anthracene	0.030 ^c	0.031 ^c	0.044 ^c	0.49 ^c
Benzo(a)pyrene	0.00089 ^c	0.00091 ^c	0.044 ^c	0.49 ^c
Benzo(b)fluoranthene	0.019 ^c	0.020 ^c	0.044 ^c	0.49 ^c
Benzo(k)fluoranthene	0.0091 ^c	0.0091 ^c	0.044 ^c	0.49 ^c
Beryllium - TR	8.6 ^a	63	4.0 ^b	280
Biphenyl	73	92	--	--
Bis(2-chloroethyl)ether	0.31 ^c	8.0 ^c	0.31 ^c	14 ^c
Bis(2-chloroisopropyl)ether	250	29,000	1,400	170,000
Bis(chloromethyl)ether	0.0016 ^c	0.15 ^c	0.0013 ^c	0.0078 ^c
Bis(2-ethylhexyl)phthalate	3.4 ^c	4.0 ^c	6.0 ^{b,c}	59 ^c
Boron	1,100	120,000	--	--
Bromate	0.46 ^c	53 ^c	10 ^b	--

Fact Sheet Attachment 3: Ohio River Basin Revisions to Human Health Criteria

Chemical	Draft Human Health (µg/l)		Current Human Health (µg/l)	
	Drink	Nondrink	Drink	Nondrink
Bromodichloromethane	5.5 ^c	170 ^c	5.6 ^c	460 ^c
Bromoform (Tribromomethane)	42 ^c	810 ^c	43 ^c	3,600 ^c
2-Butanone (Methyl ethyl ketone)	4,100	450,000	--	--
n-Butylbenzene	14	17	--	--
sec-Butylbenzene	10	12	--	--
tert-Butylbenzene	20	27	--	--
Butylbenzyl phthalate	17	17	3,000	5,200
Cadmium - TR	4.2	130	5.0 ^b	--
Carbofuran	17	34	40 ^b	--
Carbon disulfide	750	30,000	--	--
Carbon tetrachloride	4.4 ^c	39 ^c	2.5 ^c	44 ^c
Chloramines (as Cl ₂)	a	--	4,000 ^b	--
Chlordane	8.9E-04 ^c	8.9E-04 ^c	0.021 ^c	0.022 ^c
Chlorides	--	--	250,000 ^g	--
Chlorine (as Cl ₂)	1,000	120,000	4,000 ^b	--
Chlorine dioxide (as Cl ₂)	a	--	800 ^b	--
Chlorite	a	--	1,000 ^b	--
Chlorobenzene	23	28	100 ^b	21,000
Chloroform (Trichloromethane)	88 ^a	3,000	57 ^c	4,700 ^c
2-Chloronaphthalene	15	16	1,700	4,300
2-Chlorophenol	19	40	0.1 ^f	400
Chromium - TR	10,000 ^a	2,000,000	100 ^b	--
Chromium VI - Diss	19	2,200	--	--
Chrysene	33 ^c	100 ^c	0.044 ^c	0.49 ^c
Copper - TR	a	--	--	1,300
Cyanides	150	17,000	200 ^b	220,000
2,4-D	62	520	70 ^b	--
Dalapon	190	7,500	200 ^b	--
4,4'-DDD	3.7E-04 ^c	3.7E-04 ^c	0.0083 ^c	0.0084 ^c
4,4'-DDE	2.3E-05 ^c	2.3E-05 ^c	0.0059 ^c	0.0059 ^c
4,4'-DDT	5.6E-05 ^c	5.6E-05 ^c	0.0059 ^c	0.0059 ^c
Dibenz(a,h)anthracene	0.0012 ^c	0.0012 ^c	0.044 ^c	0.49 ^c
Dibromochloromethane	4.0 ^c	99 ^c	4.1 ^c	340 ^c

Fact Sheet Attachment 3: Ohio River Basin Revisions to Human Health Criteria

Chemical	Draft Human Health (µg/l)		Current Human Health (µg/l)	
	Drink	Nondrink	Drink	Nondrink
1,2-Dibromo-3-chloropropane (DBCP)	a	--	0.2 ^{b,c}	--
Di-n-butyl phthalate	100	120	2,700	12,000
Dichloroacetic acid	6.9 ^c	800 ^c	--	--
1,2-Dichlorobenzene	240	400	600 ^b	17,000
1,3-Dichlorobenzene	4.7	14	400	2,600
1,4-Dichlorobenzene	6.8	12	75 ^b	2,600
3,3'-Dichlorobenzidine	0.44 ^c	0.99 ^c	0.40 ^c	0.77 ^c
Dichlorodifluoromethane	1,000	20,000	--	--
1,2-Dichloroethane	3.8 ^c	300 ^c	3.8 ^c	990 ^c
1,1-Dichloroethylene	310 ^a	9,400	0.57 ^c	32 ^c
cis-1,2-Dichloroethylene	74 ^a	1,800	70 ^b	--
trans-1,2-Dichloroethylene	120 ^a	7,900	100 ^b	140,000
2,4-Dichlorophenol	17	86	0.3 ^f	790
1,2-Dichloropropane	610 ^a	23,000	5.0 ^{b,c}	390 ^c
1,3-Dichloropropene	2.3 ^c	7.0 ^c	10	1,700
Dieldrin	1.1E-05 ^c	1.1E-05 ^c	0.0014 ^c	0.0014 ^c
Di(2-ethylhexyl)adipate	240 ^c	1,200 ^c	400 ^b	--
Diethyl phthalate	2,100	3,400	23,000	120,000
2,4-Dimethylphenol	110	2,400	540	2,300
Dimethyl phthalate	--	--	310,000	2,900,000
1,3-Dinitrobenzene	0.87	18	--	--
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)	0.81	78	13	770
2,4-Dinitrophenol	14	800	70	14,000
2,4-Dinitrotoluene	13	260	1.1 ^c	91 ^c
2,6-Dinitrotoluene	0.43 ^c	2.7 ^c	--	--
Dinoseb	6.9	520	7.0 ^b	--
1,4-Dioxane	3.5 ^c	400 ^c	32 ^c	3,600 ^c
1,2-Diphenylhydrazine	0.37 ^c	2.2 ^c	0.40 ^c	5.4 ^c
Diquat	15	730	20 ^b	--
Dissolved solids	--	--	750,000 ^{e,g} max. 500,000 ^{e,g} ave.	--
Endosulfan ²	22	45	110	240
Endothall	140 ^a	16,000	100 ^b	--

Fact Sheet Attachment 3: Ohio River Basin Revisions to Human Health Criteria

Chemical	Draft Human Health (µg/l)		Current Human Health (µg/l)	
	Drink	Nondrink	Drink	Nondrink
Endrin ³	0.045	0.046	0.76	0.81
Ethylbenzene	530	2,400	700 ^b	29,000
Ethylene dibromide (EDB) (1,2-Dibromoethane)	0.17 ^{a,c}	9.0 ^c	0.050 ^{b,c}	--
Ethylene glycol	14,000	1,600,000	--	--
Ethylene glycol monobutyl ether (EGBE)	970	110,000	--	--
Fluoranthene	2.4	2.5	300	370
Fluorene	61	78	1,300	14,000
Fluoride	--	--	4,000 ^g	--
Formaldehyde	1,000	110,000	--	--
Glyphosate	600	4,300	700 ^b	--
Haloacetic acids (HAA5)	a	--	60 ^{b,c}	--
Heptachlor	0.0015 ^c	0.0016 ^c	0.0021 ^c	0.0021 ^c
Heptachlor epoxide	8.4E-04 ^c	8.6E-04 ^c	0.0010 ^c	0.0011 ^c
Hexachlorobenzene	2.8E-04 ^c	2.9E-04 ^c	0.0075 ^c	0.0077 ^c
Hexachlorobutadiene	0.099 ^c	0.10 ^c	4.4 ^c	500 ^c
alpha-Hexachlorocyclohexane	0.0016 ^c	0.0017 ^c	0.039 ^c	0.13 ^c
beta-Hexachlorocyclohexane	0.013 ^c	0.014 ^c	0.14 ^c	0.46 ^c
gamma-Hexachloro-cyclohexane (Lindane)	0.036	0.037	0.19 ^c	0.63 ^c
Hexachlorocyclohexane (technical grade)	0.013 ^c	0.014 ^c	0.12 ^c	0.41 ^c
Hexachlorocyclopentadiene	37	310	50 ^b	17,000
Hexachloroethane	0.94	1.1	19 ^c	89 ^c
HMX (Octahydro-1,3,5,7-tetranitro- 1,3,5,7-tetrazocine)	350	40,000	--	--
Indeno(1,2,3-c,d)pyrene	0.38 ^c	1.8 ^c	0.044 ^c	0.49 ^c
Iron - Soluble	--	--	300 ^g	--
Isophorone	360 ^c	11,000 ^c	360 ^c	26,000 ^c
Isopropylbenzene	430	990	--	--
Lead - TR	a	--	--	--
Lithium	14	1,600	--	--
Manganese - TR	920	14,000	--	--
Mercury - TR	0.012	0.012	0.012	0.012

Fact Sheet Attachment 3: Ohio River Basin Revisions to Human Health Criteria

Chemical	Draft Human Health (µg/l)		Current Human Health (µg/l)	
	Drink	Nondrink	Drink	Nondrink
Methoxychlor	2.0	2.1	40 ^b	--
Methyl bromide (Bromomethane)	9.7	890	48	4,000
Methylene chloride (Dichloromethane)	46 ^{a,c}	3,000 ^c	5.0 ^{b,c}	16,000 ^c
2-Methylphenol	340	13,000	--	--
3-Methylphenol	340	13,000	--	--
Mirex	2.9E-05 ^c	2.9E-05 ^c	1.1E-04 ^c	1.1E-04 ^c
Molybdenum	32	3,700	--	--
Naphthalene	91	200	--	--
Nickel - TR	120	13,000	610	4,600
Nitrate-N	a	--	10,000 ^b	--
Nitrite-N	a	--	1,000 ^b	--
Nitrobenzene	3.0	57	17	1,900
Nitroguanidine	720	26,000	--	--
Nitrosoamines ⁴	--	--	0.0080 ^c	12 ^c
N-Nitrosodibutylamine	0.060 ^c	0.81 ^c	0.064 ^c	5.9 ^c
N-Nitrosodiethylamine	0.0023 ^c	0.25 ^c	0.0080 ^c	12 ^c
N-Nitrosodimethylamine	0.0068 ^c	0.78 ^c	0.0069 ^c	81 ^c
N-Nitrosodi-n-propylamine	0.049 ^c	3.8 ^c	0.050 ^c	14 ^c
N-Nitrosodiphenylamine	37 ^c	78 ^c	50 ^c	160 ^c
N-Nitrosopyrrolidine	0.17 ^c	19 ^c	0.16 ^c	920 ^c
Oxamyl (Vydate)	170	6,500	200 ^b	--
Pentachlorobenzene	0.14	0.14	3.5	4.1
Pentachlorophenol	0.92 ^c	1.3 ^c	1.0 ^{b,c}	82 ^c
Perchlorate	4.9	9,300	4.9	9,300
Phenol	280	320	1.0 ^f	4,600,000
Phosphorus	d	--	d	--
Picloram	390	1,800	500 ^b	--
Polychlorinated biphenyls (PCBs)	1.9E-05	1.9E-05	0.0017 ^c	0.0017 ^c
n-Propylbenzene	32	58	--	--
Pyrene	1.4	1.4	960	11,000
RDX (Hexahydro-1,3,5-trinitro-1,3,5-triazine)	3.0 ^c	64 ^c	--	--
Selenium - TR	33	740	50 ^b	11,000
Silver - TR	35	4,000	50	--

Fact Sheet Attachment 3: Ohio River Basin Revisions to Human Health Criteria

Chemical	Draft Human Health (µg/l)		Current Human Health (µg/l)	
	Drink	Nondrink	Drink	Nondrink
Simazine	35 ^a	1,100	4.0 ^b	--
Strontium - TR	4,400	500,000	--	--
Styrene	1,200 ^a	8,600	100 ^b	--
Sulfates	--	--	250,000 ^g	--
1,2,4,5-Tetrachlorobenzene	0.024	0.024	2.3	2.9
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) ⁵	6.8E-10 ^c	6.8E-10 ^c	1.3E-07 ^c	1.4E-07 ^c
1,1,1,2-Tetrachloroethane	12 ^c	130 ^c	--	--
1,1,2,2-Tetrachloroethane	1.7 ^c	47 ^c	1.7 ^c	110 ^c
Tetrachloroethylene	5.6 ^{a,c}	33 ^c	5.0 ^{b,c}	89 ^c
Tetrahydrofuran	46 ^c	5,300 ^c	--	--
Thallium - TR	2.0 ^a	--	1.7	6.3
Toluene	500	4,900	1,000 ^b	200,000
Total Trihalomethanes (TTHMs)	a	--	--	--
Toxaphene	6.6E-05 ^c	6.6E-05 ^c	0.0073 ^c	0.0075 ^c
2,4,5-TP (Silvex)	35	100	10	--
1,2,4-Trichlorobenzene	4.8	5.1	70 ^b	940
1,1,1-Trichloroethane	160	4,000	200 ^b	--
1,1,2-Trichloroethane	6.0 ^{a,c}	200 ^c	5.0 ^b	420 ^c
Trichloroethylene	40 ^a	570	5.0 ^{b,c}	810 ^c
2,4,5-Trichlorophenol	340	650	2,600	9,800
2,4,6-Trichlorophenol	28 ^c	220 ^c	21 ^c	65 ^c
1,2,4-Trimethylbenzene	150	260	--	--
1,3,5-Trimethylbenzene	170	360	450	950
1,3,5-Trinitrobenzene	190	13,000	--	--
2,4,6-Trinitrotoluene	3.4	120	--	--
Uranium - TR	a	--	--	--
Vanadium	56	520	--	--
Vinyl chloride	0.25 ^c	19 ^c	2.0 ^{b,c}	5,300 ^c
Xylenes ⁶	800	2,200	10,000 ^b	--
Zinc - TR	1,500	5,800	9,100	69,000

Fact Sheet Attachment 3: Ohio River Basin Revisions to Human Health Criteria

Legend:

All criteria and values are expressed as total unless specified otherwise.

Diss = dissolved; TR = total recoverable.

Drink = Human health criterion applicable to the Public Water Supply designation (2-route exposure).

Nondrink = Human health criterion applicable to the General Water Based Recreation designation (1-route exposure).

Footnotes:

- ¹ The criterion for aldicarb applies to the sum of aldicarb, aldicarb sulfone and aldicarb sulfoxide.
- ² The criteria for endosulfan apply to the sum of alpha-endosulfan, beta-endosulfan and endosulfan sulfate.
- ³ The criteria for endrin apply to the sum of endrin and endrin aldehyde.
- ⁴ The criteria for nitrosoamines apply to those nitrosoamines not specifically listed in this table.
- ⁵ Regulation of the additive effects of chlorinated dibenzo dioxins and chlorinated dibenzo furans is explained in OAC 3745-2-07.
- ⁶ The criteria for xylenes apply to the sum of o-xylene, m-xylene and p-xylene.
- ^a A more stringent ambient water quality criterion based on the Maximum Contaminant Level (MCL) developed under the Safe Drinking Water Act is in draft rule 3745-1-40 of the Administrative Code.
- ^b This criterion is the Maximum Contaminant Level (MCL) developed under the Safe Drinking Water Act.
- ^c This criterion is based on a carcinogenic endpoint.
- ^d Total phosphorus as P shall be limited to the extent necessary to prevent nuisance growths of algae, weeds, and slimes that result in taste or odor problems. In areas where such nuisance growths exist, phosphorus discharges from point sources determined significant by the director shall not exceed a daily average of one milligram per liter as total P, or such stricter requirements as may be imposed by the director.
- ^e Equivalent 25°C specific conductance values are 1200 micromhos/cm as a maximum and 800 micromhos/cm as a thirty-day average.
- ^f This criterion is based on protection against adverse aesthetic effects.
- ⁹ This criterion is a National Secondary Drinking Water Regulation (NSDWR or secondary standard), which is a non-enforceable federal guideline regulating a contaminant that may cause a cosmetic effect (such as skin or tooth discoloration) or aesthetic effect (such as taste, odor, or color) in drinking water.

December 2010 Draft Water Quality Standards Rules (OAC 3745-1)
 Fact Sheet **Attachment 4: Lake Erie Basin Revisions to Human Health Criteria** (See draft rules 3745-1-38, 40 and 41)

Ohio EPA
 Division of Surface Water

Chemical	Draft Human Health (µg/l)			Current Human Health (µg/l)		
	Tier*	Drink	Nondrink	Tier*	Drink	Nondrink
Acenaphthene	II	140	230	II	570	890
Acenaphthylene	--	--	--	II	850	1,800
Acetophenone	II	970	110,000	--	--	--
Acrolein	II	1.2	1.9	--	--	--
Acrylamide	II	0.68 ^c	48 ^c	--	--	--
Acrylonitrile	II	0.53 ^c	3.0 ^c	I	0.53 ^c	3.0 ^c
Alaclor	I	69 ^a	7,900	--	--	--
Aldicarb	II	6.9	800	--	--	--
Aldrin	II	2.4E-06 ^c	2.4E-06 ^c	--	--	--
Aluminum - TR	II	5,300	22,000	II	970	4,500
Aniline	II	47	1,300	--	--	--
Anthracene	II	140	150	II	590	630
Antimony - TR	II	4.9	560	I	9.7	780
Arsenic - TR	II	0.23 ^c	19 ^c	I	10 ^b	580
Asbestos	--	a	--	--	--	--
Atrazine	I	230 ^a	3,800	--	--	--
Barium	II	1,500	170,000	I	2,000 ^b	160,000
Benzene	I	6.2 ^{a,c}	160 ^c	I	12 ^c	310 ^c
Benzidine	I	0.00092 ^c	0.0023 ^c	--	--	--
Benzo(a)anthracene	II	0.017 ^c	0.018 ^c	--	--	--
Benzo(a)pyrene	I	0.00089 ^c	0.00091 ^c	II	2.0E-5 ^c	2.0E-5 ^c
Benzo(b)fluoranthene	II	0.019 ^c	0.020 ^c	--	--	--
Benzo(k)fluoranthene	II	0.0091 ^c	0.0091 ^c	--	--	--
Beryllium - TR	II	8.6 ^a	63	I	17 ^c	130 ^c
Biphenyl	I	73	92	--	--	--
Bis(2-chloroethyl)ether	I	0.31 ^c	8.0 ^c	--	--	--
Bis(2-chloroisopropyl)ether	I	250	29,000	--	--	--
Bis(chloromethyl)ether	I	0.0016 ^c	0.11 ^c	--	--	--
Bis(2-ethylhexyl)phthalate	II	2.5 ^c	2.8 ^c	I	25 ^c	32 ^c
Boron	II	1,100	120,000	I	2,400	200,000

Fact Sheet Attachment 4: Lake Erie Basin Revisions to Human Health Criteria

Chemical	Draft Human Health (µg/l)			Current Human Health (µg/l)		
	Tier*	Drink	Nondrink	Tier*	Drink	Nondrink
Bromate	II	0.46 ^c	37 ^c	--	--	--
Bromodichloromethane	I	5.5 ^c	150 ^c	I	6.8 ^c	180 ^c
Bromoform (Tribromomethane)	I	42 ^c	720 ^c	I	52 ^c	890 ^c
2-Butanone (Methyl ethyl ketone)	I	4,100	450,000	--	--	--
n-Butylbenzene	I	14	17	--	--	--
sec-Butylbenzene	I	10	12	--	--	--
tert-Butylbenzene	I	20	27	--	--	--
Butylbenzyl phthalate	II	17	17	--	--	--
Cadmium - TR	I	4.2	130	I	14	730
Carbofuran	II	17	34	--	--	--
Carbon disulfide	I	750	30,000	--	--	--
Carbon tetrachloride	I	4.4 ^c	36 ^c	I	2.4 ^c	19 ^c
Chloramines (as Cl ₂)	--	a	--	--	--	--
Chlordane	I	2.5E-04 ^c	2.5E-04 ^c	I	2.5E-04 ^c	2.5E-04 ^c
Chlorides	--	--	--	--	250,000 ^g	--
Chlorine (as Cl ₂)	II	1,000	120,000	--	--	--
Chlorine dioxide (as Cl ₂)	--	a	--	--	--	--
Chlorite	--	a	--	--	--	--
Chlorobenzene	I	23	28	I	470	3,200
Chloroform (Trichloromethane)	I	88 ^a	3,000	I	56 ^c	1,700 ^c
2-Chloronaphthalene	II	15	16	--	--	--
2-Chlorophenol	II	19	40	I,II	0.1 ^f	150
Chromium - TR	I	10,000 ^a	2,000,000	I	140	14,000
Chromium VI - Diss	II	19	2,200	I	140	14,000
Chrysene	II	33 ^c	100 ^c	--	--	--
Copper - TR	--	a	--	I	790	64,000
Cyanides	I	150	17,000	I	600	48,000
2,4-D	I	62	520	--	--	--
Dalapon	II	190	7,500	--	--	--
4,4'-DDD	I	3.7E-04 ^c	3.7E-04 ^c	--	--	--
4,4'-DDE	I	2.3E-05 ^c	2.3E-05 ^c	--	--	--
4,4'-DDT	I	5.6E-05 ^c	5.6E-05 ^c	I	1.5E-04 ^c	1.5E-04 ^c

Fact Sheet Attachment 4: Lake Erie Basin Revisions to Human Health Criteria

Chemical	Draft Human Health (µg/l)			Current Human Health (µg/l)		
	Tier*	Drink	Nondrink	Tier*	Drink	Nondrink
Dibenz(a,h)anthracene	II	0.0012 ^c	0.0012 ^c	--	--	--
Dibromochloromethane	II	4.0 ^c	86 ^c	I	6.8 ^c	150 ^c
1,2-Dibromo-3-chloropropane (DBCP)	--	a	--	--	--	--
Di-n-butyl phthalate	II	100	120	II	31	31
Dichloroacetic acid	II	6.9 ^c	560 ^c	--	--	--
1,2-Dichlorobenzene	I	240	400	I	2,000	11,000
1,3-Dichlorobenzene	II	4.7	14	II	5,200	9,300
1,4-Dichlorobenzene	II	6.8	12	I	24 ^c	240 ^c
3,3'-Dichlorobenzidine	II	0.43 ^c	0.95 ^c	--	--	--
Dichlorodifluoromethane	II	1,000	20,000	--	--	--
1,1-Dichloroethane	--	--	--	I	1,500	62,000
1,2-Dichloroethane	I	3.8 ^c	230 ^c	I	3.8 ^c	230 ^c
1,1-Dichloroethylene	I	310 ^a	9,400	II	0.56 ^c	15 ^c
cis-1,2-Dichloroethylene	II	74 ^a	1,800	I	880	36,000
trans-1,2-Dichloroethylene	I	120 ^a	7,900	I	470	25,000
2,4-Dichlorophenol	I	17	86	I	0.3 ^f	320
1,2-Dichloropropane	I	610 ^a	23,000	I	9.1 ^c	290 ^c
1,3-Dichloropropene	I	2.3 ^c	7.0 ^c	--	--	--
Dieldrin	I	6.5E-06 ^c	6.5E-06 ^c	I	6.5E-06 ^c	6.5E-06 ^c
Di(2-ethylhexyl)adipate	II	240 ^c	1,200 ^c	--	--	--
Diethyl phthalate	I	2,100	3,400	--	--	--
2,4-Dimethylphenol	I	110	2,400	I	450	8,700
1,3-Dinitrobenzene	II	0.87	18	--	--	--
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)	II	0.81	78	--	--	--
2,4-Dinitrophenol	II	14	800	I	55	2,800
2,4-Dinitrotoluene	II	13	260	--	--	--
2,6-Dinitrotoluene	II	0.43 ^c	2.7 ^c	--	--	--
Dinoseb	II	6.9	520	--	--	--
1,4-Dioxane	I	3.5 ^c	280 ^c	I	32 ^c	2,500 ^c
1,2-Diphenylhydrazine	I	0.36 ^c	2.1 ^c	--	--	--
Diquat	II	15	730	--	--	--

Fact Sheet Attachment 4: Lake Erie Basin Revisions to Human Health Criteria

Chemical	Draft Human Health (µg/l)			Current Human Health (µg/l)		
	Tier*	Drink	Nondrink	Tier*	Drink	Nondrink
Dissolved solids	--	--	--	--	750,000 ^{e,g} max. 500,000 ^{e,g} ave.	--
Endosulfan ²	II	22	45	--	--	--
Endothall	II	140 ^a	16,000	--	--	--
Endrin ³	II	0.045	0.046	--	--	--
Ethylbenzene	I	530	2,400	I	2,100	8,900
Ethylene dibromide (EDB) (1,2-Dibromoethane)	I	0.17 ^{a,c}	7.3 ^c	--	--	--
Ethylene glycol	I	14,000	1,600,000	II	56,000	4,500,000
Ethylene glycol monobutyl ether (EGBE)	II	970	110,000	--	--	--
Fluoranthene	II	2.4	2.5	II	9.4	9.5
Fluorene	II	61	78	II	250	320
Formaldehyde	I	1,000	110,000	--	--	--
Glyphosate	II	600	4,300	--	--	--
Haloacetic acids (HAA5)	--	a	--	--	--	--
Heptachlor	II	0.0015 ^c	0.0016 ^c	--	--	--
Heptachlor epoxide	II	8.4E-04 ^c	8.6E-04 ^c	--	--	--
Hexachlorobenzene	I	2.8E-04 ^c	2.9E-04 ^c	I	4.5E-04 ^c	4.5E-04 ^c
Hexachlorobutadiene	II	0.099 ^c	0.10 ^c	II	0.22 ^c	0.24 ^c
alpha-Hexachlorocyclohexane	I	0.0016 ^c	0.0017 ^c	I	0.0048 ^c	0.0053 ^c
beta-Hexachlorocyclohexane	II	0.013 ^c	0.014 ^c	II	0.013 ^c	0.014 ^c
gamma-Hexachloro-cyclohexane (Lindane)	I	0.036	0.037	I	0.47	0.50
Hexachlorocyclohexane (technical grade)	I	0.013 ^c	0.014 ^c	I	0.013 ^c	0.014 ^c
Hexachlorocyclopentadiene	II	37	310	--	--	--
Hexachloroethane	I	0.94	1.1	I	5.3 ^c	6.7 ^c
HMX (Octahydro-1,3,5,7-tetranitro- 1,3,5,7-tetrazocine)	I	350	40,000	--	--	--
Indeno(1,2,3-c,d)pyrene	II	0.38 ^c	1.8 ^c	--	--	--
Iron - Soluble	--	--	--	--	300 ^g	--
Isophorone	II	360 ^c	9,500 ^c	--	--	--
Isopropylbenzene	I	430	990	I	1,700	3,800
Lead - TR	--	a	--	--	--	--
Lithium	II	14	1,600	--	--	--

Fact Sheet Attachment 4: Lake Erie Basin Revisions to Human Health Criteria

Chemical	Draft Human Health (µg/l)			Current Human Health (µg/l)		
	Tier*	Drink	Nondrink	Tier*	Drink	Nondrink
Manganese - TR	II	920	14,000	I	50	61,000
Mercury - TR	I	0.0031	0.0031	I	0.0031	0.0031
Methoxychlor	II	2.0	2.1	--	--	--
Methyl bromide (Bromomethane)	I	9.7	890	I	39	2,600
Methyl chloride (Chloromethane)	--	--	--	II	110 ^c	7,300 ^c
Methylene chloride (Dichloromethane)	I	46 ^{a,c}	2,600 ^c	I	47 ^c	2,600 ^c
2-Methylphenol	I	340	13,000	--	--	--
3-Methylphenol	I	340	13,000	--	--	--
Mirex	II	2.9E-05 ^c	2.9E-05 ^c	I	7.4E-05 ^c	7.4E-05 ^c
Molybdenum	II	32	3,700	I	120	10,000
Naphthalene	I	91	200	I	540	1,200
Nickel - TR	II	120	13,000	I	470	43,000
Nitrate-N	--	a	--	--	10,000 ^b	--
Nitrite-N	--	a	--	--	1,000 ^b	--
Nitrobenzene	II	3.0	57	--	--	--
Nitroguanidine	II	720	26,000	--	--	--
N-Nitrosodibutylamine	I	0.060 ^c	0.73 ^c	--	--	--
N-Nitrosodiethylamine	I	0.0023 ^c	0.18 ^c	--	--	--
N-Nitrosodimethylamine	I	0.0068 ^c	0.55 ^c	--	--	--
N-Nitrosodi-n-propylamine	I	0.049 ^c	2.9 ^c	--	--	--
N-Nitrosodiphenylamine	II	36 ^c	74 ^c	--	--	--
N-Nitrosopyrrolidine	I	0.17 ^c	13 ^c	--	--	--
Oxamyl (Vydate)	II	170	6,500	--	--	--
Pentachlorobenzene	II	0.14	0.14	I	0.18	0.19
Pentachlorophenol	II	0.92 ^c	1.3 ^c	II	1.0 ^{b,c}	1.6 ^c
Perchlorate	II	4.9	3,600	I	20	3,600
Phenol	II	280	320	I,II	1.0 ^f	2,400
Phosphorus	--	d	--	--	d	--
Picloram	II	390	1,800	--	--	--
Polychlorinated biphenyls (PCBs)	I	1.5E-05 ^c	1.5E-05 ^c	I	2.6E-05 ^c	2.6E-05 ^c
n-Propylbenzene	II	32	58	--	--	--
Pyrene	II	1.4	1.4	I	15	15

Fact Sheet Attachment 4: Lake Erie Basin Revisions to Human Health Criteria

Chemical	Draft Human Health (µg/l)			Current Human Health (µg/l)		
	Tier*	Drink	Nondrink	Tier*	Drink	Nondrink
RDX (Hexahydro-1,3,5-trinitro-1,3,5-triazine)	II	3.0 ^c	64 ^c	--	--	--
Selenium - TR	II	33	740	I	130	3,100
Silver -TR	II	35	4,000	I	130	11,000
Simazine	I	35 ^a	1,100	--	--	--
Strontium - TR	I	4,400	500,000	I	18,000	1,400,000
Styrene	I	1,200 ^a	8,600	--	--	--
Sulfates	--	--	--	--	250,000 ^g	--
1,2,4,5-Tetrachlorobenzene	I	0.024	0.024	--	--	--
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) ¹	II	6.5E-10 ^c	6.5E-10 ^c	I	8.6E-09 ^c	8.6E-09 ^c
1,1,1,2-Tetrachloroethane	II	12 ^c	130 ^c	--	--	--
1,1,2,2-Tetrachloroethane	II	1.7 ^c	41 ^c	II	1.7 ^c	41 ^c
Tetrachloroethylene	II	5.5 ^{a,c}	30 ^c	I	320	1,800
Tetrahydrofuran	II	46 ^c	3,700 ^c	--	--	--
Thallium - TR	--	2.0 ^a	--	I	1.2	3.7
Toluene	II	500	4,900	I	5,600	51,000
Total Trihalomethanes (TTHMs)	--	a	--	--	--	--
Toxaphene	I	6.6E-05 ^c	6.6E-05 ^c	I	6.8E-05 ^c	6.8E-05 ^c
2,4,5-TP (Silvex)	II	35	100	--	--	--
1,2,4-Trichlorobenzene	II	4.8	5.1	--	--	--
1,1,1-Trichloroethane	II	160	4,000	I	73,000	1,600,000
1,1,2-Trichloroethane	II	6.0 ^a	170 ^c	II	6.0 ^c	170 ^c
Trichloroethylene	II	40 ^a	570	I	29 ^c	370 ^c
2,4,5-Trichlorophenol	II	340	650	--	--	--
2,4,6-Trichlorophenol	I	28 ^c	200 ^c	I	27 ^c	190 ^c
1,2,4-Trimethylbenzene	II	150	260	--	--	--
1,3,5-Trimethylbenzene	II	170	360	I	710	1,500
1,3,5-Trinitrobenzene	II	190	13,000	--	--	--
2,4,6-Trinitrotoluene	II	3.4	120	--	--	--
Uranium - TR	--	a	--	--	--	--
Vanadium	II	56	520	--	--	--
Vinyl chloride	I	0.25 ^c	15 ^c	I	0.48 ^c	28 ^c
Xylenes ⁴	I	800	2,200	I	31,000	83,000

Fact Sheet Attachment 4: Lake Erie Basin Revisions to Human Health Criteria

Chemical	Draft Human Health (µg/l)			Current Human Health (µg/l)		
	Tier*	Drink	Nondrink	Tier*	Drink	Nondrink
Zinc - TR	II	1,500	5,800	I	5,000	35,000

Legend:

All criteria and values are expressed as total unless specified otherwise.

Diss = dissolved; TR = total recoverable.

Drink = Human health criterion applicable to the Public Water Supply designation (2-route exposure).

Nondrink = Human health criterion applicable to the General Water Based Recreation designation (1-route exposure).

Footnotes:

* Human health criteria for the Lake Erie drainage basin are based on a two-tiered classification. The two tiers are primarily distinguished by the amount of toxicity data available for deriving the concentration levels and the quantity and quality of data on bioaccumulation. See rules 3745-1-37 and 3745-1-38 of the OAC.

¹ Regulation of the additive effects of chlorinated dibenzo dioxins and chlorinated dibenzo furans is explained in OAC 3745-2-07.

² The criteria for endosulfan apply to the sum of alpha-endosulfan, beta-endosulfan and endosulfan sulfate.

³ The criteria for endrin apply to the sum of endrin and endrin aldehyde.

⁴ The criteria for xylenes apply to the sum of o-xylene, m-xylene and p-xylene.

^a A more stringent ambient water quality criterion based on the Maximum Contaminant Level (MCL) developed under the Safe Drinking Water Act is in draft rule 3745-1-40 of the Administrative Code.

^b This criterion is the Maximum Contaminant Level (MCL) developed under the Safe Drinking Water Act.

^c This criterion is based on a carcinogenic endpoint.

^d Total phosphorus as P shall be limited to the extent necessary to prevent nuisance growths of algae, weeds, and slimes that result in taste or odor problems. In areas where such nuisance growths exist, phosphorus discharges from point sources determined significant by the director shall not exceed a daily average of one milligram per liter as total P, or such stricter requirements as may be imposed by the director.

^e Equivalent 25°C specific conductance values are 1200 micromhos/cm as a maximum and 800 micromhos/cm as a thirty-day average.

^f This criterion is based on protection against adverse aesthetic effects.

^g This criterion is a National Secondary Drinking Water Regulation (NSDWR or secondary standard), which is a non-enforceable federal guideline regulating a contaminant that may cause a cosmetic effect (such as skin or tooth discoloration) or aesthetic effect (such as taste, odor, or color) in drinking water.

December 2010 Draft Water Quality Standards Rules (OAC 3745-1)
 Fact Sheet **Attachment 5: Statewide Revisions to Aquatic Life**
Criteria (See draft rule 3745-1-42)

Ohio EPA
 Division of Surface Water

			Draft Aquatic Life			Current Aquatic Life		
Chemical	Form ¹	Units ²	IMZM ³	OMZM ³	OMZA ³	IMZM ³	OMZM ³	OMZA ³
Cadmium ⁴	D	µg/l	4.8	2.4	0.82	19	9.3	3.9
Cadmium ⁴	TR	µg/l	5.2	2.6	0.93	20	9.9	4.2
Chloride	T	mg/l	1,700	860	230	--	--	--
Chlorpyrifos	T	µg/l	0.17	0.083	0.041	--	--	--
Diazinon	T	µg/l	0.34	0.17	0.17	--	--	--
Lead ⁴	D	µg/l	410	200	11	470	230	12
Lead ⁴	TR	µg/l	590	300	16	590	300	16
Nonylphenol	T	µg/l	55	28	6.6	--	--	--
Tributyltin	T	µg/l	0.92	0.46	0.072	--	--	--

Footnotes:

¹ D = dissolved; TR = total recoverable.

² mg/l = milligrams per liter (parts per million); µg/l = micrograms per liter (parts per billion).

³ IMZM = inside mixing zone maximum; OMZM = outside mixing zone maximum; OMZA = outside mixing zone average.

⁴ Criteria for this chemical are dependent on water hardness. Criteria listed are at a hardness of 200 mg/l CaCO₃.

Rule 3745-1-01: Purpose and applicability.

- Paragraph (E)(2). “401 water quality certification or an isolated wetland permit” was changed to “state water quality permit” to be consistent with draft changes in OAC Chapter 3745-32.

Rule 3745-1-02: Definitions.

- Paragraph (A). QHEI (Qualitative habitat evaluation index) and SCV (Secondary chronic value) were added to the list of acronyms.
- Paragraph (B)(77). QHEI, which is used in new rule 3745-1-56, was defined.

Rule 3745-1-03: Analytical methods and availability of documents.

- Paragraph (B). Ohio EPA web addresses were updated.
- Dates were updated for:
 - Paragraph (B)(1). CFR citations
 - Paragraph (B)(2). Federal statute citations
 - Paragraph (B)(3)(a). Biological criteria manuals
 - Paragraph (B)(3)(c). Field Evaluation Manual for Ohio’s Primary Headwater Habitat Streams
 - Manual of Ohio EPA Surveillance Methods and Quality Assurance Practices
- A citation for “Compensatory Mitigation Requirements for Stream Impacts in the State of Ohio,” which is referenced in new rule 3745-1-56, was added.
- Paragraph (B)(3)(k). The citation for “Pollution Control Standards for discharges to the Ohio River” was deleted because the reference to this document in draft rule 3745-1-32 was removed.

Rule 3745-1-07: Beneficial use designations.

- Paragraph (D). The recreation use designation definitions were updated to reflect rule revisions adopted December 15, 2009. The table of class A primary contact recreation streams was replaced with a table that includes the upstream and downstream boundaries of the class A primary contact recreation segments. In determining the upstream and downstream boundaries from the descriptions on the Ohio DNR Division of Watercraft website, we identified seven segments that extend up into tributaries of the named streams. Those upstream tributaries are listed below and were added to the table of class A primary contact recreation segments:
 - Ashtabula river, East branch
 - Duck creek, West fork
 - Ohio brush creek, West fork
 - White oak creek, East fork
 - Captina creek, North fork
 - Little beaver creek, Middle fork
 - St. Joseph river, East branch
- Paragraph (F)(6). The definition of limited resource water was updated to allow this use only if there is no potential for recovery of degraded conditions within 50 years.

- Paragraph (G)(1). The upland drainage use designation was revised.
- Paragraph (G)(3). A paragraph allowing the director to consider site-specific information when determining drainage use designations was added.

Rule 3745-1-31: Lake Erie standards.

- Paragraph (C). The draft new restrictions on open lake disposal of dredge material in Lake Erie were removed; those restrictions will be addressed in a future rulemaking.

Rule 3745-1-32: Ohio river standards.

- The reference to the ORSANCO Pollution Control Standards was replaced with the standards from that publication that are more stringent than the statewide standards.

Rule 3745-1-38: Methodologies for development of human health criteria and values

- Paragraph (C). An Ohio EPA web address was updated.

Rule 3745-1-40: Water quality criteria for water supply use designations.

- Ohio EPA web addresses were updated.
- Table 40-1. The title of the table was revised and a criterion for copper was added.
- Table 40-2. The human health criteria were updated based on more recent toxicity and bioaccumulation information.

Rule 3745-1-41: Water quality criteria for recreation use designations.

- Ohio EPA web addresses were updated.
- Table 41-2. The human health criteria were updated based on more recent toxicity and bioaccumulation information.
- Paragraph (B) and Table 41-3. The recreation use text was updated to reflect rule revisions adopted December 15, 2009.

Rule 3745-1-42: Water quality criteria for the base aquatic life use designation.

- Ohio EPA web addresses were updated.
- Table 42-3A. Equations for dissolved criteria were added.
- Table 42-3. The cadmium criteria were revised based on the publication "Mebane, C.A., 2006, Cadmium risks to freshwater life: Derivation and validation of low-effect criteria values using laboratory and field studies (version 1.1): U.S. Geological Survey Scientific Investigations Report 2006-5245, 130p."
- Table 42-3. The text from footnote 6 was moved to the beginning of table A.

Rule 3745-1-43: Water quality criteria for the tiered aquatic life use designations.

- Table 43-12. The lake habitat criteria and footnote 3 were revised to reflect further analyses.