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Florida's Human Health-Based Water Quality Criteria (HHC)

What is HHC?

HHC are water quality standards required by each state to protect human health. The criteria specify how much of a chemical may be present in a water body before there is a threat to human health.

Why is the Florida Department of Environmental Protection (FDEP) updating its HHC?

Florida's current standards were last updated in 1992. Under the federal Clean Water Act, states are required to periodically review and update standards based on the latest scientific information. Proposed changes are then submitted to the Environmental Protection Agency for approval.

What changes are being proposed by FDEP?

FDEP has revised 43 existing human health criteria. ***Approximately half of the revised criteria are higher than the existing criteria***, many of these are carcinogenic or endocrine-disrupting compounds. The other half are lower than existing criteria. FDEP is also proposing human health criteria for 39 new compounds.

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- FDEP **used a less conservative model** to update its criteria than the model typically used by states and the one recommended by the EPA.

FDEP used a probabilistic approach to develop human health criteria, instead of the deterministic approach used by the Environmental Protection Agency (EPA). No other state in the nation utilizes the probabilistic approach to determine human health criteria. While the probabilistic method does account for more variability in the population, it also typically results in much less conservative outcomes, meaning Floridians will be exposed to higher concentrations of potentially dangerous chemicals.

- FDEP **used a risk level that is less protective** than the EPA-recommended risk threshold.

EPA recommends using a risk level for calculating human health standards for carcinogenic chemicals of one in one million (1:1,000,000) for the 90th percentile of the population. *However, EPA allows weaker protections based on state policy*. As a result, FDEP is only using a risk level of one in one million (1:1,000,000) to protect ***the average Floridian***. FDEP also chose less protective risk levels for many of the individual chemicals that it evaluated. As a result, the proposed limits for at least 66 of the 82 chemicals are higher than the limits recommended by EPA.

- **FDEP does not adequately protect Floridians who frequently eat local fish.**

Fish consumption is one of the primary pathways for exposure to these dangerous chemicals, and Floridians are eating a lot more fish than originally estimated when the current criteria were developed. In fact, the average Fish Consumption Rate (FCR) has nearly quadrupled and is also higher than the national average. The more fish we eat, the more chemicals we ingest. Raising the pollution limits for dozens of chemicals, as FDEP is proposing, will only further increase our chances of cancer and other health problems. FDEP's criteria would expose "regular (weekly) consumers of Florida fish" to a risk level of one in a hundred thousand (1:100,000) and would expose subsistence fishers and those who eat fish more frequently to a risk level of up to one in ten-thousand (1:10,000).

For those of us who live in the Atlantic region of Florida, the 90th percentile FCR is 29.17 grams/day. The national average for the 90th percentile is 22 grams/day.

- **FDEP methodology does not account for synergistic effects of exposure to multiple chemicals.**

People are exposed to a wide range of chemicals from multiple sources in their everyday lives. Exposure to more than one contaminant at the same time can "produce a cumulative or even synergistic toxicity." **According to the FDEP, "A chemical-by-chemical assessment of risk, as conducted in this analysis, could underestimate risks from more than one chemical in combination."**

Recently, the Halifax Project, an international consortium of 174 scientists from 26 countries, concluded that some chemicals considered non-carcinogenic in isolation may increase cancer risk when present in the environment in certain mixtures. Of the 85 chemicals researchers examined, 50 were found to affect cancer-causing processes in the body, even at very low doses.

It has been estimated that over 80,000 chemicals are available for sale and use in the USA and that 500–600 new chemicals are introduced to the market every year. However, for many of these chemicals human health effects are unknown and even less is known about the synergistic effect of exposure to a combination of multiple chemicals. Little to no clinical data exists, regarding the chronic effects of any of the "safe" levels of chemicals and their impact on various chronic diseases such as cancer. These "safe" levels are most often derived using mathematical modeling based on laboratory acute effects in rats and mice.

As a result, we need to err on the side of caution and the health of ALL Floridians, by establishing conservative criteria that will account for the significant and alarming uncertainty that currently exists.

- **Key stakeholders were not represented.**

On July 27, the Environmental Regulatory Commission (ERC) voted 3-2 to approve FDEP's proposed HHC.

Unfortunately, the ERC proceeded with the vote despite having two vacancies - the environment seat and the local government seat.

HUMAN HEALTH CRITERIA
FREQUENTLY ASKED QUESTIONS

Is DEP weakening standards?

Absolutely not. DEP and EPA are strengthening Florida's water quality standards, not weakening them. Moving forward with the proposed criteria is critical to better protect Floridians' health because the criteria nearly doubles the number of chemicals that the department will be able to regulate. The proposed rule sets stringent and protective criteria for 39 chemicals that currently have no limits.

In addition, this rule includes updates for 43 chemicals whose standards are more than 20 years old. Both the new and updated criteria have been calculated using the most advanced science, including recently issued guidance from the EPA. **Each and every criterion protects Floridians, according to both EPA and the World Health Organization.**

Why is DEP updating these standards?

Florida's current standards were last updated in 1992. Under the federal Clean Water Act, states are required to periodically review standards publicly and modify and adopt changes as appropriate. To meet this requirement and to incorporate new data released by EPA last summer, DEP is working to update these criteria based on this new scientific information.

Is it true that the 39 additional chemicals are not currently allowed in Florida's waters and that these standards will now allow them in our surface waters?

This is simply not true; in fact, the opposite is the case. There are currently no standards in place to allow DEP to directly regulate these 39 additional chemicals. This is exactly why it is so important for these standards to be adopted. The new standards will provide the basis for permit limits for these chemicals in surface water discharges from permitted facilities. In addition, the new criteria will provide critical information for water-quality assessments, which take into account these chemicals and target them for restoration.

What are Human Health Criteria?

Human Health Criteria are health-based water-quality standards the U.S. Environmental Protection Agency (EPA) and the Florida Department of Environmental Protection (DEP) set to ensure Floridians can continue to safely eat Florida's seafood, and swim and drink potable water from state surface waters.

Why didn't DEP just adopt EPA's numbers?

EPA's guidance and recommendation to states is to develop criteria that "use local or regional data in place of EPA's default value." DEP's proposed criteria take into account how, and how much, Floridians eat seafood, drink, shower and swim, and set the limits necessary to protect Floridians from adverse health effects. The criteria consider a range of environmental variables specific to Florida and account for the most at-risk populations, including young children, pregnant women and those whose diets comprise primarily of Florida seafood. **Each and every criterion protects Floridians, according to both EPA and the World Health Organization.**

Why do some of EPA's and DEP's limits go up, while some go down?

Both the new and updated criteria have been calculated using the most advanced science, including recently issued guidance from the EPA for updating 43 chemicals whose standards are more than 20 years old. While EPA and DEP's chemical limits go up and down based on new data and science, **each and every criterion protects Floridians, according to both EPA and the World Health Organization.**

continued

How were the proposed criteria calculated?

EPA issued new scientific recommendations in 2015, based on national water quality trends as well as averages for factors such as human weight and water use. The department is required to follow EPA's science while also accounting for Florida's specific water chemistry and population.

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Are these criteria less protective than EPA's?

Each and every one of Florida's proposed criterion protects Floridians, according to both EPA and the World Health Organization. The criteria are consistent with level of protection contained in EPA's recommendations.

Did any outside experts weigh in on the development of these criteria?

To help develop our criteria, DEP received direct input from a seven-member scientific review panel, that provided comments and recommendations on our technical and scientific approach. This panel included representatives from the EPA, the Florida Department of Health, four different Florida universities and the California Environmental Protection Agency. DEP is following the panel's recommendations.

What did DEP do to engage and inform the public?

DEP's nationally recognized scientists have worked diligently since 2012 to develop the proposed Florida-specific human health criteria. These criteria have been calculated based on the best science available, guidance from EPA and a scientific peer review panel, and input from the public.

Since 2012, the department has held 11 public workshops/meetings at a variety of locations across Florida as part of this rulemaking. These included public workshops in West Palm Beach, Orlando, Tallahassee, Leesburg, Fort Myers and Stuart.

There was also public participation in the public meeting for the Human Health Criteria Peer Review Committee in 2012, which discussed the methodology to derive the criteria in detail.

All parties that requested notification of rulemaking activities and updates as part of our interested parties list were also sent notices via email notifying them of the public meetings. Through this effort, the department has regularly communicated with more than 1,000 individuals, organizations and stakeholders to provide updates and solicit feedback.

Are these standards being changed to cater to industry or allow fracking?

No, this update stems from requirements under the Clean Water Act as well as the new EPA guidance. It is not in response to any specific industry or practice and has nothing to do with hydraulic fracturing.

Why aren't some chemicals such as arsenic and dioxin being updated?

EPA did not update either of these chemicals in its 2015 guidance; however, Floridians clearly remain protected from arsenic and dioxin, two chemicals that are currently regulated in Florida – at EPA's specified levels – under the Clean Water Act. DEP will continue to collect data and update Florida's surface water criteria, including human health criteria, when valid scientific information is available.

What are the next steps in the process?

The proposed standards will go before the Florida Environmental Regulation Commission (ERC) for approval. Public participation is part of this hearing process. If adopted, the criteria will then go to EPA for final review and approval.

Chemical Name	CASRN	Effect	Existing Class I Criteria (µg/L)	Proposed Class I Criteria (µg/L)	Existing Class III Criteria (µg/L)	Proposed Class III Criteria (µg/L)
1,1,1-Trichloroethane	71556	Non-C	No current limit	12000	No current limit	190000
1,1,2-Trichloroethane	79005	C	No current limit	1.2	No current limit	20
1,2,4-Trichlorobenzene	120821	C	No current limit	0.14	No current limit	0.15
1,2-Dichlorobenzene	95501	Non-C	No current limit	1400	No current limit	3900
1,2-Dichloroethane	107062	C	No current limit	22	No current limit	1200
1,2-Dichloropropane	78875	C	No current limit	2	No current limit	63
1,2-Diphenylhydrazine	122667	C	No current limit	0.077	No current limit	0.48
1,3-Dichlorobenzene	541731	Non-C	No current limit	8.3	No current limit	18
1,3-Dichloropropene	542756	C	No current limit	0.59	No current limit	23
1,4-Dichlorobenzene	106467	Non-C	No current limit	340	No current limit	1100
2,4-Dimethylphenol	105679	Non-C	No current limit	120	No current limit	2800
2-Chloronaphthalene	91587	Non-C	No current limit	960	No current limit	1400
2-Methyl-4,6-Dinitrophenol	534521	Non-C	No current limit	1.8	No current limit	29
3,3'-Dichlorobenzidine	91941	C	No current limit	0.11	No current limit	0.34
3-Methyl-4-Chlorophenol	59507	Non-C	No current limit	540	No current limit	2700
Acrolein	107028	Non-C	No current limit	3	No current limit	300
Acrylonitrile	107131	C	No current limit	0.13	No current limit	11
Benzidine	92875	C	No current limit	0.00031	No current limit	0.020
Bis(2-Chloro-1-Methylethyl) Ether	108601	Non-C	No current limit	240	No current limit	4000
Bis(2-Chloroethyl) Ether	111444	C	No current limit	0.066	No current limit	4.1
Bis(2-Ethylhexyl) Phthalate	117817	C	No current limit	1.5	No current limit	2.1
Butylbenzyl Phthalate	85687	C	No current limit	0.29	No current limit	0.29
Chlorobenzene	108907	Non-C	No current limit	110	No current limit	970
Diethyl Phthalate	84662	Non-C	No current limit	770	No current limit	840
Dimethyl Phthalate	131113	Non-C	No current limit	2400	No current limit	2400
Di-n-Butyl Phthalate	84742	Non-C	No current limit	35	No current limit	36
Ethylbenzene	100414	Non-C	No current limit	80	No current limit	140
Heptachlor Epoxide	1024573	C	No current limit	0.00010	No current limit	0.000099
Hexachlorocyclopentadiene	77474	Non-C	No current limit	4.7	No current limit	5
Hexachloroethane	67721	C	No current limit	0.24	No current limit	0.27
Isophorone	78591	C	No current limit	76	No current limit	3600
Methyl Bromide	74839	Non-C	No current limit	120	No current limit	10000
Nitrobenzene	98953	Non-C	No current limit	12	No current limit	570
Pentachlorobenzene	608935	Non-C	No current limit	0.14	No current limit	0.15
Toluene	108883	Non-C	No current limit	56	No current limit	610

trans-1,2-Dichloroethylene (DCE)	156605	Non-C	No current limit	120	No current limit	3900
Vinyl Chloride	75014	C	No current limit	0.048	No current limit	3
Anthracene	120127	Non-C	9600	460	110000	540
1,1,2,2-Tetrachloroethane	79345	C	0.17	0.35	10.8	5.9
1,1-Dichloroethylene	75354	Non-C	0.057	300	3.2	16000
2,4,6-Trichlorophenol	88062	C	2.1	3.3	6.5	6.6
2,4-Dichlorophenol	120832	Non-C	93	16	790	65
2,4-Dinitrophenol	51285	Non-C	69.7	12	14260	330
2,4-Dinitrotoluene	121142	C	0.11	0.11	9.1	3.5
2-Chlorophenol	95578	Non-C	120	30	400	860
Acenaphthene	83329	Non-C	1200	110	2700	130
Aldrin	309002	C	0.00013	0.0000038	0.000140	0.0000038
alpha-Endosulfan	959988	Non-C*	0.056	0.056	0.056 F/0.0087 M	0.056 F/0.0087 M
Antimony	7440360	Non-C	14	2.4	4300	240
Benzene	71432	C	1.18	2.0	71.28	53
Benzo(a)anthracene	56553	C	0.0028	0.012	0.031	0.014
Benzo(a)pyrene	50328	C	0.0028	0.0012	0.031	0.0014
Benzo(b)fluoranthene	205992	C	0.0028	0.0120	0.031	0.014
Benzo(k)fluoranthene	207089	C	0.0028	0.12	0.031	0.14
Beryllium	7440417	Non-C	0.0077	11	0.13	64
beta-Endosulfan	33213659	Non-C*	0.056	0.056	0.056 F/0.0087 M	0.056 F/0.0087 M
beta-Hexachlorocyclohexane (HCH)	319857	C	0.014	0.018	0.046	0.033
Bromoform	75252	C	4.3	15	360	260
Carbon Tetrachloride	56235	C	0.25	0.95	4.42	10
Chlordane	57749	C	0.00058	0.0010	0.00059	0.0010
Chlorodibromomethane	124481	C	0.41	1.8	34	44
Chloroform	67663	Non-C	5.67	60	470.8	2300
Chlorophenoxy Herbicide (2,4,5-TP) [Silvex]	93721	Non-C	10	160	No current limit	570
Chlorophenoxy Herbicide (2,4-D)	94757	Non-C	100	1200	No current limit	13000
Chrysene	218019	C	0.0028	1.2	0.031	1.4
Cyanide	57125	Non-C	5.2	3.7	5.2F/1.0M	5.2F/1.0M
Dibenzo(a,h)anthracene	53703	C	0.0028	0.0012	0.031	0.0014
Dichlorobromomethane	75274	C	0.27	2.1	22	57
Dieldrin	60571	C	0.00014	0.0000054	0.00014	0.0000054
Endosulfan Sulfate	1031078	Non-C*	0.056	0.056	0.056 F/0.0087 M	0.056 F/0.0087 M
Endrin	72208	Non-C*	0.0023	0.0023	0.0023	0.0023
Fluoranthene	206440	Non-C	300	18	370	19
Fluorene	86737	Non-C	1300	77	14000	94

gamma- Hexachlorocyclohexane (HCH)	58899	Non-C*	0.95	0.95	0.95 F/0.16 M	0.95 F/0.16 M
Heptachlor	76448	C	0.00021	0.000025	0.00021	0.000025
Hexachlorobutadiene	87683	C	0.45	0.018	49.7	0.018
Indeno(1,2,3-cd)pyrene	193395	C	0.0028	0.012	0.031	0.014
Methoxychlor	72435	Non-C	0.03	0.023	0.03	0.023
Methylene Chloride	75092	C	4.65	36	1580	2300
p,p'- Dichlorodiphenyltrichloroethane (DDT)	50293	C	0.00059	0.00015	5.90E-04	1.50E-04
Pentachlorophenol	87865	C	0.28	0.067	8.2	0.11
Phenol	108952	Non-C*	300	300	300	300
Polychlorinated Biphenyls (PCBs)	X	C	0.000044	0.000098	0.000045	0.000098
Pyrene	129000	Non-C	960	43	11000	49
Selenium	7782492	Non-C*	5	5	5 F/71 M	5 F/71 M
Tetrachloroethylene (Perchloroethylene)	127184	C	0.8	23	8.85	66
Toxaphene	8001352	C*	0.00020	0.00020	0.00020	0.00020
Trichloroethylene (TCE)	79016	C	2.7	1.3	80.7	15

*Florida criteria set to protect more senstive aquatic life uses

F=Class III Freshwater criterion

M=Class III Marine and Class II criterion