

Water Quality Standards Human Health Criteria Workgroup

January 27, 2021

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Jan 27, 2021 Meeting Agenda

Human Health Criteria (HHC) Workgroup

- Discuss Workgroup moving forward
- Finalize Workgroup Goals
- Review spreadsheet of remaining criteria
- Review IRIS data with Jennie Henthorn
- Plan remaining 4 meetings: February - May

Agenda uploaded on 1/26/20 to
<https://dep.wv.gov/WWE/Programs/wqs/Pages/WQSpblicmeetings.aspx>

Moving the HHC Workgroup Forward

HHC Workgroup Goals

- **Reasonable standards** - scientifically defensible standards that are appropriate for use in WV
- **Protective regulations** - to protect West Virginians
- **To Learn** - broaden horizons, gain a better understanding
- **To Reach Consensus** - science-based standards that protect citizens against water pollution



WV's Remaining Criteria

We have arranged remaining criteria in groups for your reviewing convenience

Let's open the spreadsheet...

WV DEP 2020 proposed criteria		WVMA more stringent or close to EPA criteria			At least one order of magnitude lower	
polycyclic aromatic hydrocarbons (PAHs)		WVMA suggested less stringent than EPA criteria			At least one order of magnitude higher	
EPA criteria more stringent than current WV criteria		EPA criteria more stringent than current WV criteria			At least one order of magnitude higher	
Compound Type	Chemical	Units	WV Current Category A	2015 EPA Recom. Criteria	Cat A WVMA* suggested Criteria	Comparison of 2015 EPA recommended criteria to current WV criteria
1 Fungicide	Hexachlorobenzene	ng/l	0.72	0.079	0.89	9.1x lower
2 Inorganic	Cyanide	µg/l	5.0	4		1.25x lower
3 non-carcinogen PAH	2-Chloronaphthalene	µg/l	1000	800	1200	1.25 lower
4 non-carcinogen PAH	Acenaphthene	µg/l	670	70	200	9.6x lower
5 non-carcinogen PAH	Anthracene	µg/l	8300	300	1780	27.7x lower
6 non-carcinogen PAH	Fluoranthene	µg/l	300	20	46	15x lower
7 non-carcinogen PAH	Fluorene	µg/l	1100	50	270	22x lower
8 non-carcinogen PAH	Pyrene	µg/l	830	20	178	41.5x lower
9 PAH carcinogens	Benzo(a) Anthracene	µg/l	0.0038	0.0012	0.0038	
10 PAH carcinogens	Benzo(a) Pyrene	µg/l	0.0038	0.00012	0.0038	
11 PAH carcinogens	Benzo(b) Fluoranthene	µg/l	0.0038	0.0012	0.0038	
12 PAH carcinogens	Benzo(k) Fluoranthene	µg/l	0.0038	0.012	0.0038	
13 PAH carcinogens	Chrysene	µg/l	0.0038	0.12	0.0038	
14 PAH carcinogens	Dibenzo(a,h) Anthracene	µg/l	0.0038	0.00012	0.0038	
15 PAH carcinogens	Indeno(1,2,3-cd)Pyrene	µg/l	0.0038	0.0012	0.0038	
16 Pesticide	Aldrin	ng/l	0.071	0.00077	0.097	92.2x lower
17 Pesticide	alpha-BHC (alpha-Hexachlorocyclohexane)	µg/l	0.0039	0.00036	0.0034	10.8x lower
18 Pesticide	beta-BHC (beta- Hexachlorocyclohexane)	µg/l	0.014	0.0080	0.012	1.75x lower
19 Pesticide	Chlordane	ng/l	0.46	0.31	1.6	1.5x lower
20 Pesticide	DDT	ng/l	0.024	0.03	0.44	1.25x higher
21 Pesticide	Dieldrin	ng/l	0.071	0.0012	0.1	59.2x lower
22 Pesticide	gamma-BHC	µg/l	0.019	4.2	51	221x higher
23 Pesticide	Heptachlor	ng/l	0.21	0.0059	0.17	35.6x lower
24 Pesticide	Methoxychlor	µg/l	0.03	0.02	0.53	1.5x lower
25 Pesticide	Methyl Bromide	µg/l	47	100	131	2.13x higher
26 Phenol	2,4,6-Trichlorophenol	µg/l	2.1	1.5		1.4x lower
27 Phenol	2,4-Dichlorophenol	µg/l	93	10	17	9.3x lower
28 Phenol and herbicide	Pentachlorophenol	µg/l	0.28	0.03	0.08	9.3x lower
29 Phthalate ester	Bis(2-Ethylhexyl) Phthalate	µg/l		0.32		
30 Phthalate ester	Butylbenzyl Phthalate	µg/l		0.10	6.5	
31 Phthalate ester	Diethyl Phthalate	µg/l		2000	4100	
32 Phthalate ester	Diethyl Phthalate	µg/l		600	58000	
33 Phthalate ester	Di-n-Butyl Phthalate	µg/l		20	490	
34 VOC	1,2-dichlorobenzene	mg/l	2.7	1	2	2.7x lower
35 VOC	Chlorobenzene	mg/l	0.68	0.1	130	6.8x lower
36 VOC	Ethylbenzene	mg/l	3.1	0.068	0.130	45.6x lower

Comparing Cancer Slope Factors and Reference Doses to IRIS database values

Take it away,
Jennie!

	CAS Registry Number	Current WV Cancer Slope Factor (CSF) (per mg/kg-d)	Cancer Slope Factor (CSF) in IRIS database?	Date Revised	Reference Dose (RfD) (mg/kg-d)	Reference Dose (RfD) in IRIS database?	Date Revised	Discussion
1,2-dichlorobenzene	95-50-1	ND	no		0.3	0.09	8/1/1989	2006 ATSDR - more current methodology
2-Chloronaphthalene	91-58-7	ND	no		0.08	0.08	11/1/1990	
Acenaphthene	83-32-9	ND	no		0.06	0.06	11/1/1990	
Aldrin	309-00-2	17	17	9/30/1987	0.00003	0.00003	3/31/1987	
alpha-BHC	319-84-6	6.3	6.3	3/31/1987	0.008	no		2005 ATSDR assessment (no impact due to lower criterion with CSF)
Anthracene	120-12-7	ND	no		0.3	0.3	9/1/1990	
Benzene	71-43-2	0.05	0.055	1/9/2000	0.005	0.004	4/17/2003	Rounding for CSF
Benzo(a) Anthracene	56-55-3	0.73	PAH		ND	no		Newer IRIS Assessment
Benzo(a) Pyrene	50-32-8	7.3	1	1/19/2017	ND	0.0003	1/19/2017	Newer IRIS Assessment
Benzo(b) Fluoranthene	205-99-2	0.73	PAH		ND	no		Newer IRIS Assessment
Benzo(k) Fluoranthene	207-08-9	0.073	PAH		ND	no		Newer IRIS Assessment
beta-BHC	319-85-7	1.8	1.8	9/30/1987	ND	no		
Butylbenzyl Phthalate	85-68-7	0.0019	no		1.3	0.2	9/1/1989	2000 Health Canada - more recent calculation methodology
Chlordane	57-74-9	0.35	0.35	2/7/1998	0.0005	0.0005	2/7/1998	
Chlorobenzene	108-90-7	ND	no		0.02	0.02	8/1/1989	
Chrysene	218-01-9	0.0073	PAH		ND	no		Newer IRIS Assessment
DDT	50-29-3	0.34	0.34	8/22/1988	0.0005	0.0005	3/31/1987	
Dibenzo(a,h)Anthracene	53-70-3	7.3	PAH		ND	no		Newer IRIS Assessment
Dieldrin	60-57-1	16	16	9/7/1988	0.00005	0.00005	9/7/1988	
Diethyl Phthalate	84-66-2	ND	no		0.8	0.8	9/30/1987	
Dimethyl Phthalate	131-11-3	ND	no		10	no	9/7/1988	1980 EPA Office of Water (OW) assessment based on 1948 study
Di-n-Butyl Phthalate	84-74-2	ND	no		0.1	0.1	1/31/1987	
Ethylbenzene	100-41-4	ND	no		0.022	0.1	1/31/1987	2015 Health Canada - more recent study
Fluoranthene	206-44-0	ND	no		0.04	0.04	9/1/1990	
Fluorene	86-73-7	ND	no		0.04	0.04	11/1/1990	
gamma-BHC	58-89-9	ND	no		0.0047	0.0003	1/31/1987	
Heptachlor	76-44-8	4.1	4.5	9/30/1987	0.0001	0.0005	9/30/1987	1999 California EPA - more recent calculation methodology
Hexachlorobenzene	118-74-1	1.02	1.6	3/1/1991	0.0008	0.0008	9/26/1988	2008 EPA OPP RED - more recent calculation methodology
Indeno(1,2,3-cd)Pyrene	193-39-5	0.73	PAH		ND			Newer IRIS Assessment
Methoxychlor	72-43-5	ND	no		0.00002	0.005	09/01/1990	2010 California EPA - more recent study
Methyl Bromide	74-83-9	ND	no		0.02	0.0014	09/26/1988	2006 EPA Office of Pesticide Programs - more up to date
2,4-Dichlorophenol	120-83-2	ND	no		0.003	0.003	1/31/1987	
Pentachlorophenol	87-86-5	0.4	0.4	9/30/2010	0.005	0.005	9/30/2010	
Pyrene	129-00-0	ND	no		0.03	0.03	9/1/1990	
			Number is different than IRIS					
		1.1111	Number is basis for criterion calculation					

February meeting

Feb 10
1st Day Legislative Session

**Feb 24 HHC Workgroup
Meeting**

March meeting



March 31
HHC Workgroup
Meeting

April meeting



Apr 10
Last Day Legislative
Session

Apr 28 HHC
Workgroup Meeting

May meeting

Will need to come to an agreement at this meeting as to what to propose to the Secretary for recommended updates to WV's HHC

Meeting earlier
in month due
to impending
rules deadlines

May 12
Final HHC Workgroup
Meeting

Additional discussion



HHC Workgroup Goals

- **Reasonable standards** - approvable by WV Legislature & EPA
- **Protective regulations** - to protect West Virginians
- **To Learn** - broaden horizons, gain a better understanding
- **To Reach Consensus** - agree on what to propose in 2021

