

# Water Quality Standards Human Health Criteria Workgroup

November 18, 2020

Laura Cooper  
Assistant Director DWWM, Water Quality Standards  
[Laura.k.cooper@wv.gov](mailto:Laura.k.cooper@wv.gov)



# Nov 18, 2020 Meeting Agenda

## Human Health Criteria (HHC) Workgroup

- Revisit HHC Workgroup Plan & outcomes
- Review of EPA discussion
- Priority Pollutants
- Overview of the IRIS database
- Plan next meeting and conclude

Agenda uploaded on 11/16/20 to

<https://dep.wv.gov/WWE/Programs/wqs/Pages/WQSpblicmeetings.aspx>

# HHC Workgroup Goals

a work in progress

- Reasonable standards - **approvable or defensible** to 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



# Review Discussion with EPA

## Question 1

Regarding EPA's confidence in use of  $K_{ow}$  for determining bioaccumulation in so many criteria

**Answer:** used Agency for Toxic Substances and Disease Registry (ATSDR) preferentially, then Hazardous Substances Data Bank, and if multiple  $K_{ow}$  used the mean

[Agency for Toxic Substances Disease Registry \(ATSDR\)](#)

[Hazardous Substances Data Bank \(HSDB\)](#)

# Review Discussion with EPA

## Question 2

Using data from studies for some chemicals from a particular research study but not for other chemicals in the same study, for example the 1985 Freitag et al paper

**Answer:** Used Arnot & Gobas database and Environment Canada database. Freitag paper specifically, data points were rated poor or “unverified” and didn’t end up using any of the Freitag data for National BAFs

Arnot, J.A., and A.P.C. Gobas. 2006. A review of bioconcentration factor (BCF) and bioaccumulation factor (BAF) assessments for organic chemicals in aquatic organisms. *Environmental Reviews* 14(4):257-297

Environment Canada. 2006. Bioaccumulation Canada. In *The OECD QSAR Toolbox, Version 3.3.2*. An online database. Retrieved January 5, 2015. Organisation for Economic Cooperation and Development, Paris, France.

# Review Discussion with EPA

## Question 3

What is EPA's plan to recalculate these criteria due to recent updates to toxicity research in the IRIS database? Also, most studies for BAFs were before the year 2000. Does EPA plan to re-examine these with more recent BAF/BCF data?

**Answer:** Updating the criteria takes a long time—took 15 years to update it this time. Will likely focus next on the human health criteria that were *not* updated in 2015

Used the most recent versions of the databases available at the time

# Review Discussion with EPA

## Question 4

Regarding how EPA moved through decisions on bottom level of framework/decision tree

**Answer:** Depends on chemical characteristics—based on the framework, they can only use  $K_{ow}$  method if chemical falls under Procedure 1 or 3. For Aldrin, they could use  $K_{ow}$  because Aldrin was under Procedure 1.

Would be helpful if there was a column on the spreadsheet showing which procedure was applicable based on the framework

# Review Discussion with EPA

## Additional Questions (pg 1 of 3)

**Any other states like WV or DE looking into more detail on HHC?**

FL adjusted BAFs a few years ago, were held up by litigation, now doing fish study

**How does EPA account for cumulative impacts of compounds?**

Use a hazard quotient of 1, but also use RSC for noncarcinogens

**Does EPA recommend using  $10^{-5}$  or  $10^{-6}$ ?**

EPA uses  $10^{-6}$ , but guidance recommends using risk no greater than  $10^{-4}$

**Bioaccumulation in human tissue, regarding body weight**

Bigger body weight would result in less stringent criteria



# Review Discussion with EPA

## Additional Questions (pg 2 of 3)

### **Accounting for children in exposure factors**

Could use other tables in exposure factors handbook, but EPA uses adults

### **Accounting for mutagenic compounds in exposure factors**

Would need to ask Colleen about that, send in this and any other Q's

### **How is EPA addressing recommended criteria above MCLs?**

Website states some criteria may be higher than MCL

### **How many other states rely solely on EPA's recommendations?**

Most states do adopt criteria as recommended, but some adjustments do occur

# Review Discussion with EPA

## Additional Questions (pg 3 of 3)

### **More vs Less stringent, should it be a factor in adoption?**

EPA just followed the science in revising criteria, whether State adopts criteria that are either more or less stringent, that's up to them

### **How is EPA responding to states who don't have all 94 criteria?**

EPA must have recommended criteria for priority pollutants and may ask States for explanation as to why they do not adopt recommended criteria. EPA has authority to determine a criterion is necessary for a given state, whether it's a priority or non-priority pollutant. Suggested making comments and having state respond to comments during public comment process.

# Priority Pollutants

EPA developed the **Priority Pollutant List** in 1977 to make implementation of the Toxic Pollutant List more practical for water testing and regulatory purposes

## **EPA used four criteria to select and prioritize specific pollutants:**

- Includes all pollutants specifically named on the list of toxic pollutants;
- There had to be a chemical standard available for the pollutant, so that testing for the pollutant could be performed;
- The pollutant had to have been reported as found in water with a frequency of occurrence of at least 2.5 percent, and
- The pollutant had to have been produced in significant quantities, as reported in Stanford Research Institute's "1976 Directory of Chemical Producers, USA."

# Priority Pollutants

Portions of the priority pollutant list are outdated. It contains some pesticides that have not been manufactured in the U.S. for many years and are therefore unlikely to be discharged into surface waters.

**There are 126 chemicals on the priority pollutant list**

Of these,

- WV has water quality standards for 80
- EPA has recommended criteria for 121

# Priority Pollutants in Water Quality Standards

## EPA's rules on States adopting criteria

**Inclusion of pollutants:** States must adopt those water quality criteria that protect their designated use

**Toxic pollutants:** States must review water quality data and information on discharges to identify specific water bodies where toxic pollutants may be adversely affecting water quality or the attainment of the designated water use or where the levels of toxic pollutants are at a level to warrant concern and must adopt criteria for such toxic pollutants applicable to the water body sufficient to protect the designated use.

# EPA comments on WV 2020 HHC revisions

## 2020 Comment from EPA to WV

*“West Virginia is proposing to adopt revisions to 24 water quality criteria for the protection of human health. These revisions are consistent with EPA’s CWA 304(a) recommended criteria and we have no further comment. Through our review, we did note that WVDEP is adding a revised provision 8.6 that calls for the establishment of a work group to research and review the human health criteria that WVDEP is not revising in this proposal. EPA would be happy to provide information to the work group as needed.”*

**EPA stated that WV’s revisions are consistent with 304(a) recommended criteria**

# IRIS Integrated Risk Information System

Identifies and characterizes health hazards of chemicals found in the environment.

IRIS assessments provide

(among other indicators):

**Reference Dose (RfD)** An estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime.

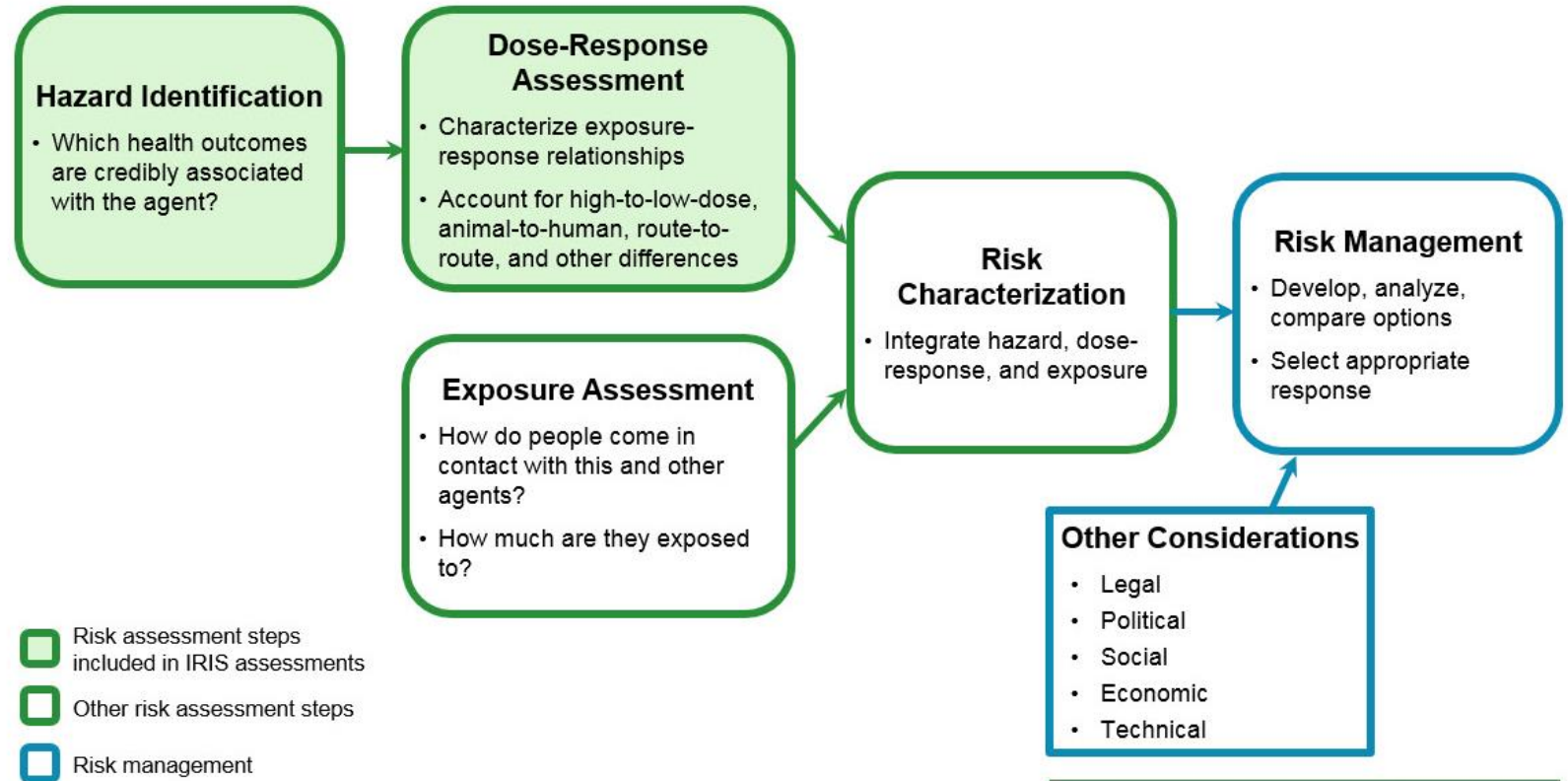
**Cancer descriptors** characterize the chemicals likelihood of being carcinogenic

# IRIS Integrated Risk Information System

IRIS assists with the first 2 steps in Risk Assessment

1. Hazard Identification, and
2. Dose-Response Assessment

## Connections between IRIS Assessments, Risk Assessment, and Risk Management



*IRIS assessments evaluate only human health hazards, and do not address the legal, political, social, economic, or technical considerations involved in risk management.*



# IRIS Integrated Risk Information System

## Benzo(a)pyrene

- Human exposure varies depending on lifestyle, occupation, & living conditions
- Animal studies show exposure is associated with developmental, reproductive, immunological and cancer effects
- Neurodevelopmental effects determined to be the most sensitive of possible effects

# Additional discussion



# December meeting

What would you like us to discuss at the December meeting?

Does Wednesday Dec 17 at 10AM work for everyone?

