



RECAP 2014: What's New?

# RECAP 2014

## PROPOSED DRAFT REVISIONS

- These revisions are:
  - Proposed for consideration/discussion
  - Today is a forum for technical exchange
  - Draft
  - Informal comments/input are still being received
  - Subject to change
- Final revisions for formal rulemaking
  - Public Comment Period

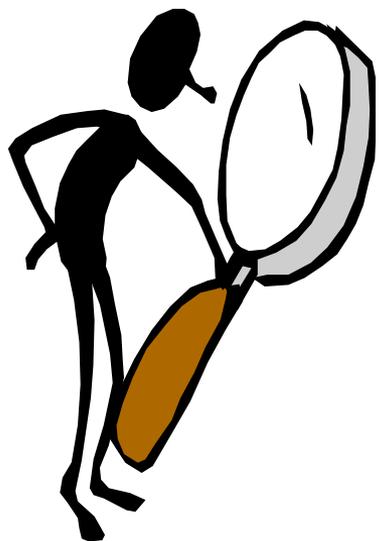
# RECAP 2014: THE GOOD NEWS IS ...

No change in the overall  
implementation of RECAP\*



\*Exception: Vapor Intrusion Pathway

# OVERVIEW



- **Text Re-organized/Streamlined**

- Data requirements
- Exposure Assessment
- Toxicity Assessment
- Risk Characterization
- Corrective Action
- Screening and Management Options
- RECAP 2014 vs 2003

# RECAP 2003 VS 2014

RECAP 2003	DRAFT RECAP 2014
Section 2.2	Omitted
Sections 2.3, 2.4, 2.5, 2.6.2	Moved to Section 2.2 Data Requirements
Sections 2.6, 2.7, 2.8, 2.9, 2.10, 2.11	Moved to Section 2.3 Exposure Assessment
Section 2.15	Moved to Section 2.4 Toxicity Assessment
Sections 2.12, 2.13, 2.14	Moved to Section 2.5 Risk Characterization
Sections 2.16, 2.17, 2.19	Moved to Section 2.6 Corrective Action
Section 2.18	Section 2.8
Section 2.20	Section 2.9
Sections 3.4, 4.3, 5.4, 6.9	Table 5 Submittal Requirements
Section 8.0	Omitted
Figures 2, 3, 5 through 19	Omitted
Appendix A	Omitted
Appendix B air sampling guidance	Moved to Appendix G
Appendix G	Examples omitted; additivity text moved to Section 2.5 Risk Characterization
Appendix G Table G-1	Table 4 SO and MO-1 Noncarcinogenic Targets
Appendix H equations	Appendix A
Appendix H text	Moved to Sections 3.3, 4.3, 5.3, 6.3
Appendix I	Appendix H

# OVERVIEW



- **Text/Figures added for clarification**
  - Soil source area
  - COC with special considerations
- **Technical approach revised to current EPA recommendations**
  - RS equations/inputs
  - TPH
  - VI
- **Policy revisions**

# RECAP 2003 VS 2014

DRAFT RECAP 2014 Topic/Location in Document	DRAFT RECAP 2014 Proposed Change
Use of conceptual site model	Omitted
Industrial land use NAICS codes (Section 2.3.1.1)	Minor revisions
Calculation of soil AOIC (Section 2.3.1.3)	ProUCL or equivalent software; AOIC based on recommended UCL-AM
Identification of Soil Source Area (Section 2.3.1.4)	Clarification
Groundwater Classification (Section 2.3.2)	1) Alternate means of classification may be considered 2) Data from nearby site(s) may be used for classification
Groundwater 3 CC (Section 2.3.2.4)	UCL-AM may be used instead of max concentration
Fish/Shellfish (Section 2.3.4)	Evaluation of fish/shellfish shall be based on state protocol
Toxicity values (Section 2.4.1)	1) New hierarchy and guidance on the selection and use of toxicity values 2) Route-to-route extrapolation omitted
RECAP Standards (Section 2.5.3)	1) New acronym for soil leachate standard (Soil <sub>LSS</sub> , Soil <sub>LS</sub> ) 2) Soil gas standards (ESG, SSSG) 3) Acronym for indoor air changed from C <sub>a</sub> to IA 4) Soil <sub>es</sub> , GW <sub>es</sub> , GW <sub>air</sub> omitted 5) State background levels based on 2012 USGS soil survey data
Background (Section 2.5.3.9)	Some literature references may be approved by the department for use in establishing background
Corrective Action (Section 2.6)	New guidance on CAS and CAP
Conveyance Notice (Section 2.6.4)	Added requirement for department approval before filing

# EXPOSURE ASSESSMENT

## Includes:

- Land Use
- Soil AOI/AOIC
- Groundwater classification
- POC and POE
- Groundwater AOI/CC



# EXPOSURE ASSESSMENT



- CSM omitted
- Minor revisions to land use NAICS codes
  - Colleges, medical facilities, vacation facilities
- Soil AOIC
  - ProUCL; recommended UCL → AOIC
- Soil source area

# EXPOSURE ASSESSMENT

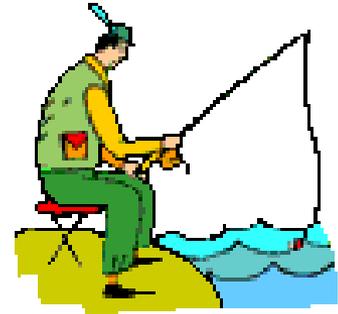


- Groundwater classification
  - Alternate means of classification may be considered by Dept
  - Data from nearby sites may be used for classification
- Groundwater 3 CC
  - 95%UCL-AM vs max at POC
- Revised Domenico DF spreadsheet

# EXPOSURE ASSESSMENT

- Fish and Shellfish

- *Protocol for Issuing Public Health Advisories for Chemical Contaminants in Recreationally Caught Fish and Shellfish (LDHH, LDEQ, LDAF, and LDWF 2012)*



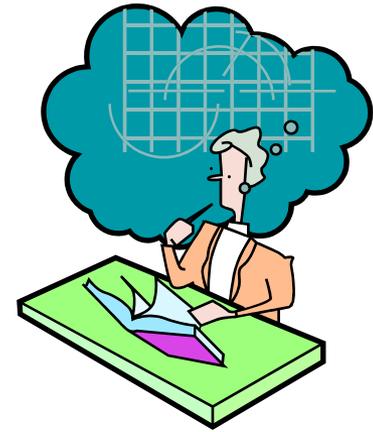
# TOXICITY ASSESSMENT



## Includes: Id of toxicity values

- Toxicity hierarchy revised
  - Tier 1 IRIS
  - Tier 2 PPRTV
  - Tier 3 ATSDR, other states, HEAST, screening PPRTV
- Toxicity values revised
- No route-to-route extrapolation
- RfC replaces RfD<sub>i</sub>; URF replaces SF<sub>i</sub>
- Mutagens – ADAFs
- Some COC have multiple SF, ex) TCE

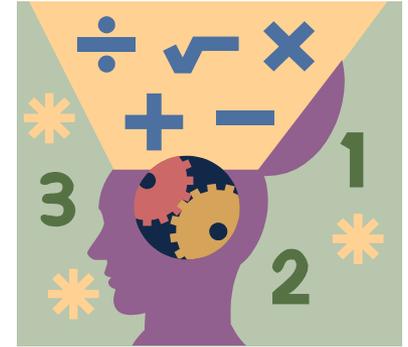
# RISK CHARACTERIZATION



## Includes:

- Target risk level/HI
- Screening Standards and RECAP Standards
  - Soil and groundwater
  - Indoor air and soil gas
  - Other media
  - ARARs
  - Background
  - Reporting limits
  - Other considerations in selecting LRS

# RISK CHARACTERIZATION



- SS, MO-1 RS and MO-2 Appendix H RS revised
- $Soil_{es}$ ,  $GW_{es}$ ,  $GW_{air}$ ,  $Soil_{ni}$ -PEF,  $Soil_i$ -PEF omitted
- New RS: ESG, SSSG,  $Soil_{LS}$ ,  $C_a \rightarrow IA$
- $10^5$  mg/kg ceiling for soil
- RL revised
- Clarification on use of alternate risk range
- Summary of factors to consider in selecting LRS

# RISK CHARACTERIZATION



- Background
  - Soil background levels based on USGS 2012
  - As, Cu, Tl
- Select background literature values may be approved by Dept.

# CORRECTIVE ACTION

## New Guidance

- Corrective Action Study
- Corrective Action Plan



# CONVEYANCE NOTICE

## New Requirement

- Conveyance Notice must be approved by the department prior to filing



# TEXT: SO, MO-1, MO-2, MO-3



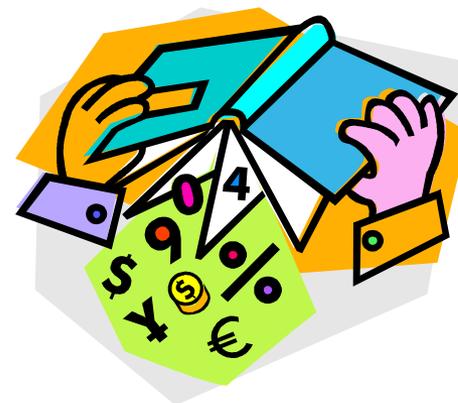
- Comprehensive guidance for each option
- Additions:
  - SS/RS definitions
  - Identification of Limiting SS and RS (formerly in Appendix H)
  - Soil and Groundwater assessment
- Deletions:
  - General data requirements
  - Submittal requirements moved to Table 5
  - MO-3 Probabilistic Risk Assessment omitted

# SOIL RE-USE

- Soil Re-Use option omitted



# APPENDIX A



- Site Ranking requirement omitted
- 2003 Appendix H is now Appendix A:  
*Methods for the Calculation of SS and RS*
- Streamlined to include equations only
- Text portion moved to SO, MO-1, MO-2, and MO-3
- Revised equations:
  - $Soil_{ni}$ ,  $Soil_i$ ,  $GW_1$ ,  $GW_2$ , IA
  - $Soil_{ni}$  and  $Soil_i$  include inhalation of particulates
  - New equations/inputs for mutagens (ADAF)
  - $GW_{1/2}$  – child receptor for NC effects
  - RfC replaces  $RfD_i$  and IR; IUR replaces  $SF_i$  and IR

# APPENDIX A



## METHODS FOR DEVELOPMENT OF SS AND RS

- Equations and exposure defaults are consistent with EPA Mid-Atlantic Regional SL equations
- EPA Mid-Atlantic Regional SL calculator replaces DEQ spreadsheet except for  $GW_3$  and  $Soil_{GW_3}$
- DEQ tox hierarchy  $\neq$  EPA tox hierarchy
- EPA Mid-Atlantic Regional SL physical/chemical properties
- LDEQ soil parameter defaults
- TPH fractions, tox values, physical/chemical properties differ

# APPENDIX A

- Soil<sub>GW</sub> Method 2 (TCLP back-calculation) and Method 4 (Site-specific partition coefficient) omitted
- Soil<sub>GW</sub> for metals based on soil/water partition coefficient approach
- Table A-1 Toxicity Values
- Table A-2 Physical/Chemical Properties and other inputs
- Table A-3 Analytical Reporting Limits



# APPENDIX B: SITE INVESTIGATION

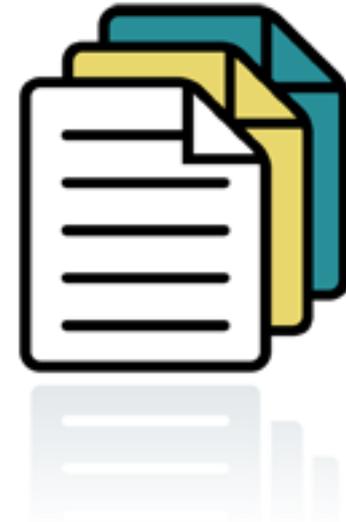


- Only minor revisions
- Requirements for using data from a nearby site to classify groundwater
- Clarification on use of leachate tests (SPLP)
- MO-3 Biota sampling – Fish Advisory Protocol



# APPENDIX C: RECAP FORMS

- Use of Forms streamlined
- MANY Forms omitted or combined
- New Form for NFA documentation



# APPENDIX D

## Guidelines for Assessing Constituents with Special Considerations



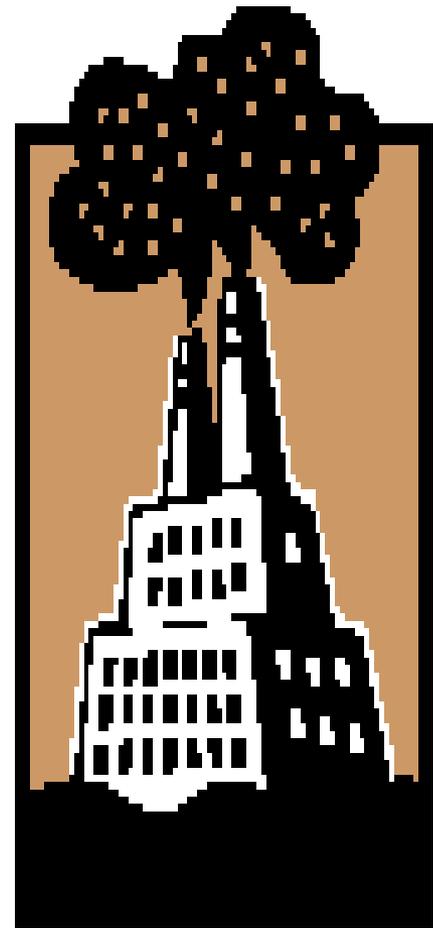
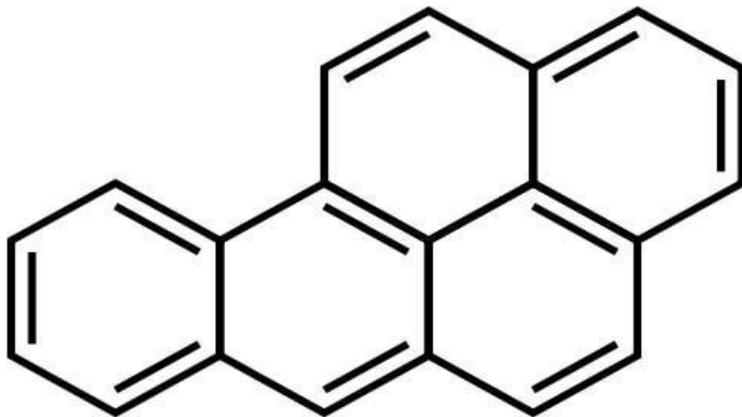
# APPENDIX D: TPH



- EPA PPRTV approach replaces TPHCWG
- Fractions remain the same; indicator COC slightly different
- EPA toxicity data new; TPHCWG EF&T data remain the same
- EPA Method 8015, TPH-GRO, TPH-DRO, TPH-ORO omitted
- 10,000 ppm cap omitted
- Soil<sub>sat</sub> values for fractions added
- Alternate approach(es) may be used to evaluate for presence of NAPL when Soil<sub>sat</sub> is exceeded

# APPENDIX D: PAH

- Benzo[a]pyrene Equalivant Approach (BAPE) approach added for addressing anthropogenic background levels in soil

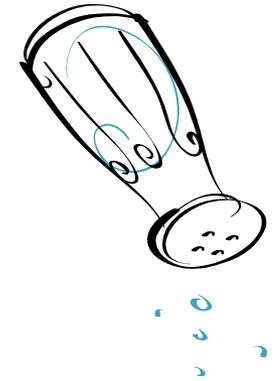


# APPENDIX D: PRODUCED WATER

- COC for addressing produced water release



# APPENDIX D: SODIUM CHLORIDE



- Guidance on addressing NaCl releases
- Addition of soil leachate and groundwater SS and MO-1 RS
- Guidance on site-specific evaluations under MO-2 and MO-3



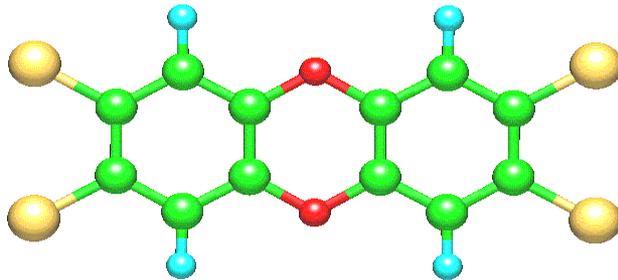
# APPENDIX D: LEAD



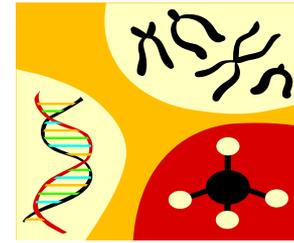
- EPA Revisions to default inputs for adult model
- Industrial soil RS revised to 800 ppm
- New SS and MO-1 Soil<sub>GW</sub> based on soil/water partition coefficient equation

# APPENDIX D: DIOXINS

- Revised TEFs
- Total TEQ includes dioxin-like PCB congeners
- Soil SS and MO-1 RS for total TEQ (TCDD)



# APPENDIX D: MUTAGENS



- A *mutagen* is a carcinogen that has a mutagenic mode of action
- Some carcinogens with a mutagenic mode of action may cause irreversible changes to DNA which would have a greater effect in early-life exposure (childhood)
- Age-dependent adjustment factors (ADAF)
- Currently 19 mutagens identified
  - vinyl chloride, TCE, B[a]P, D[ah]A, methylene chloride

# APPENDIX D: NITROGENOUS COMPOUNDS

- Nitrate/nitrite/ammonia
- Evaluated based on total nitrogen
- SS and MO-1 RS for soil and groundwater



# APPENDIX D: SULFATES

- Guidance on addressing sulfates
- Approach similar to that for other non-traditional COC
- SS and MO-1 RS for soil and groundwater

# APPENDIX D: ACIDS/CAUSTICS



- Assessment primarily focused on pH
- Approach similar to past Department recommendations and FAQ

# APPENDIX E: NAICS

- North American Industry Classification System listing has been revised to 2012 codes



# APPENDIX F: AQUIFER TESTS

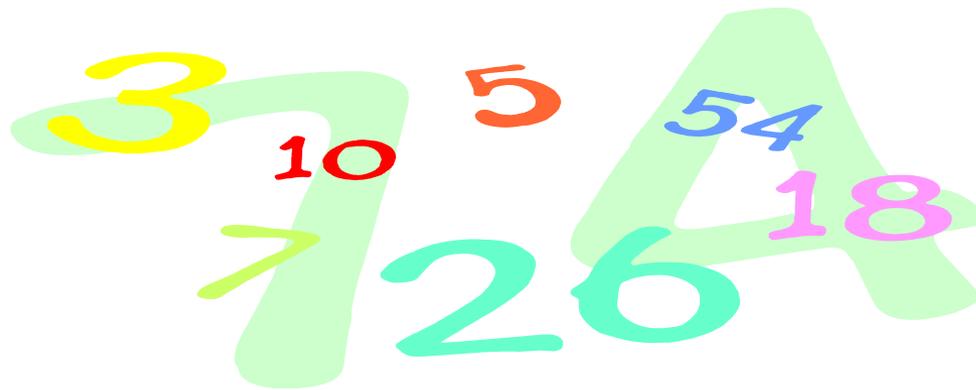
- Additional guidance/clarification on conducting groundwater pumping tests for classifying groundwater



# APPENDIX G 2013: ADDITIVITY

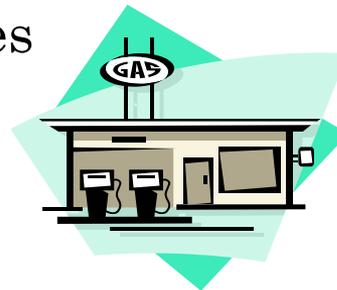


- 2003 Appendix G (Additivity) has been omitted; **however**, adjusting RS for additivity has **not** been omitted
- Additivity is addressed in the text
- Revised examples will be added to FAQs



# APPENDIX G 2014: VAPOR INTRUSION PATHWAY

- EPA released new draft guidance 2013
- Multiple lines of evidence used to determine if pathway is complete
- Chlorinated COC – approach site-specific
- Petroleum hydrocarbons – screening criteria
  - Inclusion zones (horizontal and vertical)
  - Benzene and TPH levels in soil and groundwater
  - O<sub>2</sub>, CO<sub>2</sub>, CH<sub>4</sub> soil profiles



# APPENDIX G 2014: VAPOR INTRUSION PATHWAY

## Sampling

- Indoor air (earlier in assessment process)



- Sub-slab soil gas (active facilities)



- Exterior soil gas

- Near the vapor source
- Immediately adjacent to structure



# APPENDIX G 2014: VAPOR INTRUSION PATHWAY

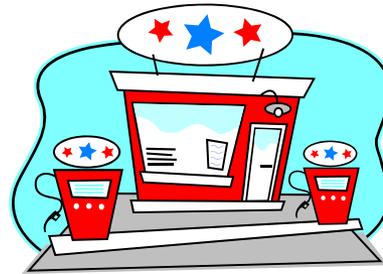
## Vapor Intrusion RS:

- Soil<sub>es</sub> and GW<sub>es</sub> omitted
- New RS for VI pathway:
  - **IA:** Indoor Air (= C<sub>a</sub>)
  - **ESG:** Exterior Soil Gas (IA/α)
  - **SSSG:** Sub-Slab Soil Gas (IA/α)
- IA based on LAC 33:III Table 51.2
- Risk-based IA equation revised
- Alpha factors revised



# APPENDIX H

- 2003 Appendix I → 2014 Appendix H
- **2014 Appendix H: A MO-2 Site-Specific RECAP Evaluation for Typical UST Sites and Other Small Petroleum Hydrocarbon Releases**
- Not limited to UST sites
- 7 categories of RS:
  - 0.5 acre source area
  - seven  $f_{oc}$  ranges



# RECAP 2014



QUESTIONS  
COMMENTS  
SUGGESTIONS

Thank you for your interest in RECAP!  
DEQ appreciates your input!