Significant Emission Rates and Screening Steps

July 28, 2016

Questions on Significant Emission Rates

Review of SERs and Emissions

1) What factors should we consider in developing SERs?

2) What adjustments to screening assumptions should we consider if a source fails SER test?

3) How will source emissions be obtained?

Questions on Significant Emission Rates

Comparison of Significant Emission Rates

Significant emission rates vary widely

		Example SERs			
Common Name	CAS #	Washington "Small Quantity Emission Rate" lbs/yr	Rhode Island "Minimum Quanitities" lbs/yr	WA/RI Ratio	New York "Mass Emission Limit" (binned) lbs/yr
1,3-Butadiene	106990	1.13	3	0.38	25
Acetaldehyde	75070	71	50	1.42	1000
Arsenic	7440382	0.0581	0.02	2.91	1
Benzene	71432	6.62	10	0.66	100
Chromium(VI)	18540299	0.00128	0.009	0.14	0.1
Formaldehyde	50000	32	9	3.56	100
Naphthalene	91203	5.64	3	1.88	
Perchloroethylene	127184	32.4	20	1.62	1000
Trichloroethylene	79016	95.9	50	1.92	500

Questions on Significant Emission Rates

Comparison of Significant Emission Rates

Can be based on backward modeling of a risk based conc. (RBC)

Washington

Screen3
Backward model RBC
Hypothetical typical building
Small business stack params
Moderately buoyant plume
Moderate exit velocity
Downwash
Conservative meteorology
Multiple simulations
Annual SERs

New York

Screen3
Backward model RBC/2 (acct for bkg)
Hypothetical typical building
Moderate stack parameters
Downwash
Max conc at 100 ft from stack
Multiply emit rate x 10 to adjust for population receptors at 500 ft
Annual Emissions then rounded and binned so SERs generalized.

Rhode Island

Screening model like Screen3
Backward model 1-hr, 24-hr, and Annual RBCs
Hypothetical RI sources
Assume conservative parameters and downwash
Conservative meteorology
SERs for 1-hr, 24-hr, and Annual average times.

Questions on Significant Emission Rates

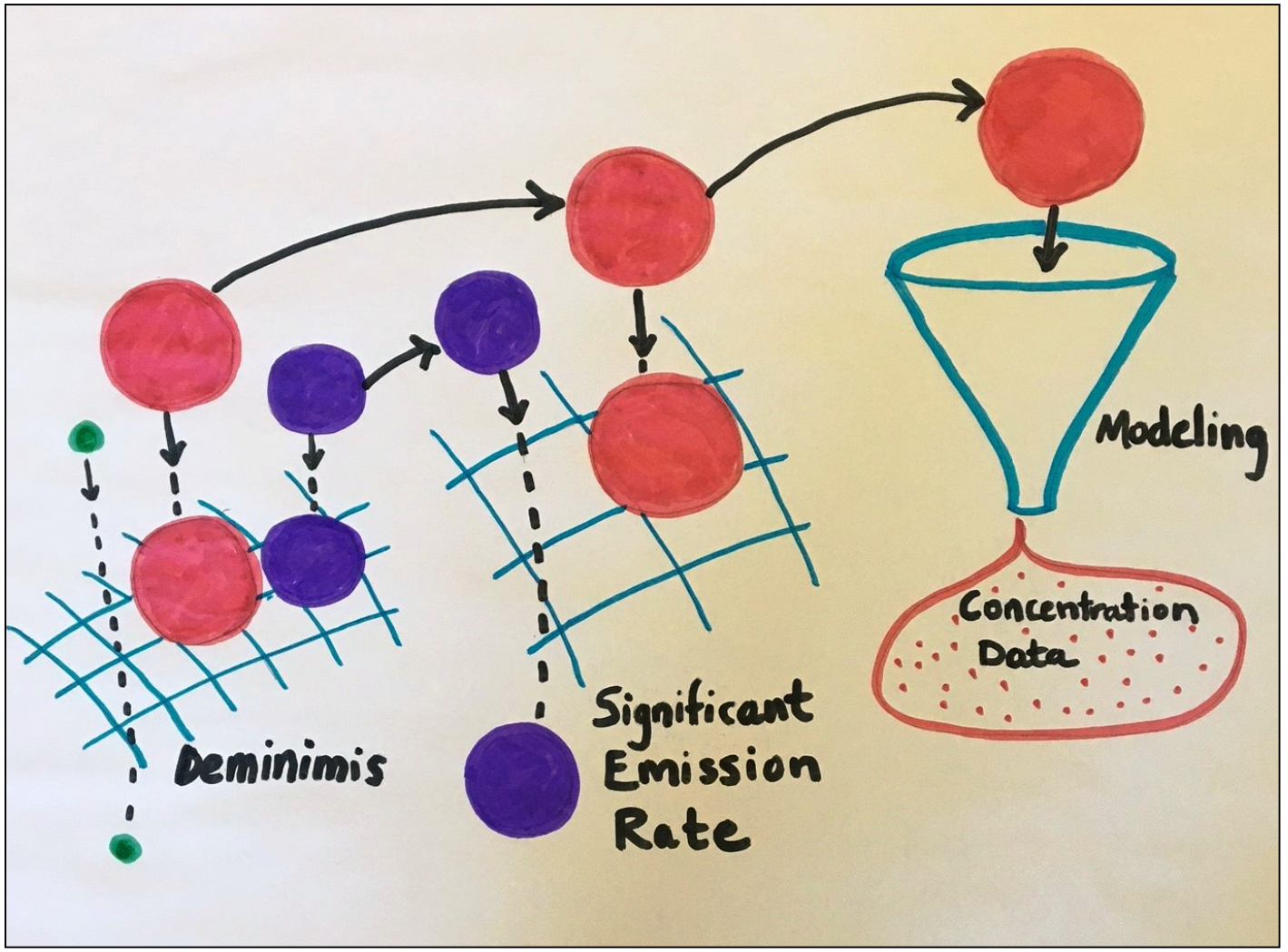
Key concept in stepwise risk screening: balance

- Screen must be conservative enough to protect RBC and public health
- Screen should be functional enough to successively screen out sources at progressively more refined levels of analysis.

Questions on Significant Emission Rates

Screening Steps

1) Use *de minimus* emission rate screen
   if fail,
2) Use SER screen
   if fail,
3) Model emissions to estimate ambient concentration and risk



Questions on Significant Emission Rates

- What should we consider when setting significant emission rates
  - Background and nearby sources
  - Conservative modeling conditions
  - Fenceline vs sensitive public receptors
- How do we determine if the SER achieves a fine balance between conservativeness and functionality?

Development of SERs

For:

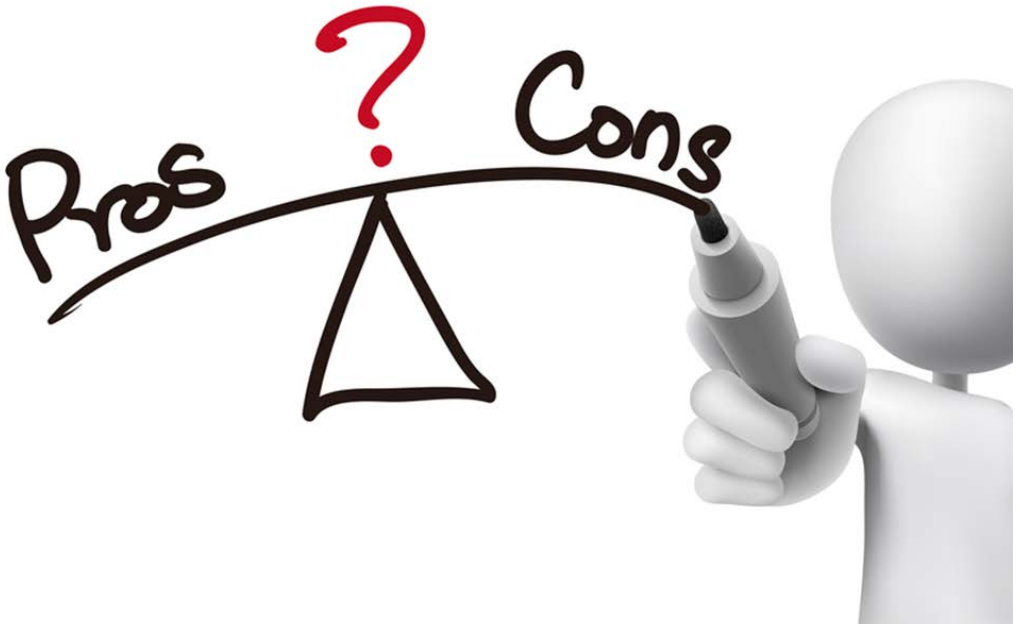
1) Using a screen model to develop SERs.

2) Modifying results to account for background and location of receptors.

3) Using annual avg SERs for initial screening level analysis.

De Minimis emission rates

Some programs use an additional screen – a de minimis screening level. What are the pros and cons of this?



Conservative Assumptions

The purpose of the SERs are to determine if more refined risk assessment screening should be conducted.

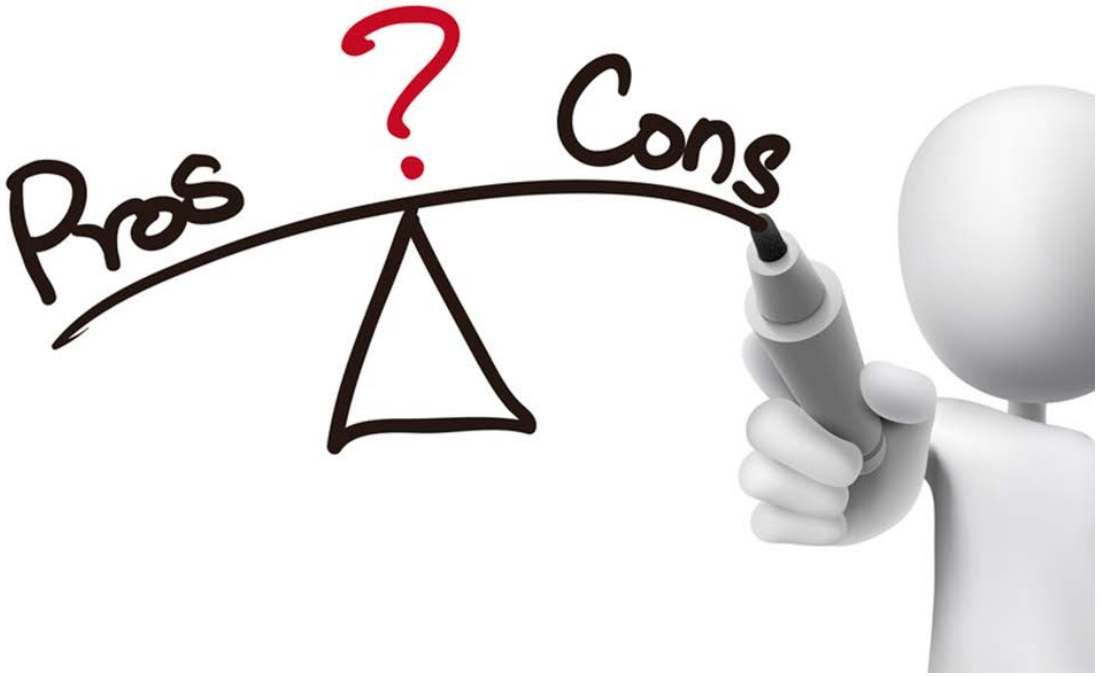
For later steps

- How can we adjust conservative assumptions, such as:
  - simplified source description
  - very poor meteorology
  - fenceline vs sensitive receptors
  - modeled vs exposure concentrations?

- Does your agency estimate exposure concentrations as part of air toxics permitting?

De Minimis emission rates

What are the pros and cons of using exposure concentrations versus ambient concentrations?



Use of SER and other tools

- How have other programs used a combination of the Significant Emission Rates, de Minimus, Risk assessment and other tools to make sure that regulations gained a benefit for public health?

- What does Oregon need to consider related to this?

High quality data from permittee

- Are there any programs that do not rely on reporting from the permittee?
- How do programs generate and verify high-quality data?

Verifying emissions

- Do other programs estimate emissions through:
  - Stack testing?
  - Continuous Emissions Monitoring?
  - Production data and Emission factors?
- What are the pros and cons of these methods ?

Verifying emissions

- How do other programs use emissions inventory in permitting ?
  - Oregon maintains an emissions inventory of HAPs
  - Oregon and EPA exchange and share EI data
  - EPA's inventory includes speciation of VOCs using TRI and other data.

Verifying emissions

Are there other issues we should be aware of regarding the use of:

- SERs
- conservative assumptions in screening
- estimating emissions
- use of emission inventories?