

Cleaner Air Oregon



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Portland Moss Study




<http://www.sciencedirect.com/science/article/pii/S0048969716306052>

<http://www.fs.fed.us/pnw/research/2016/mar/index.shtml>

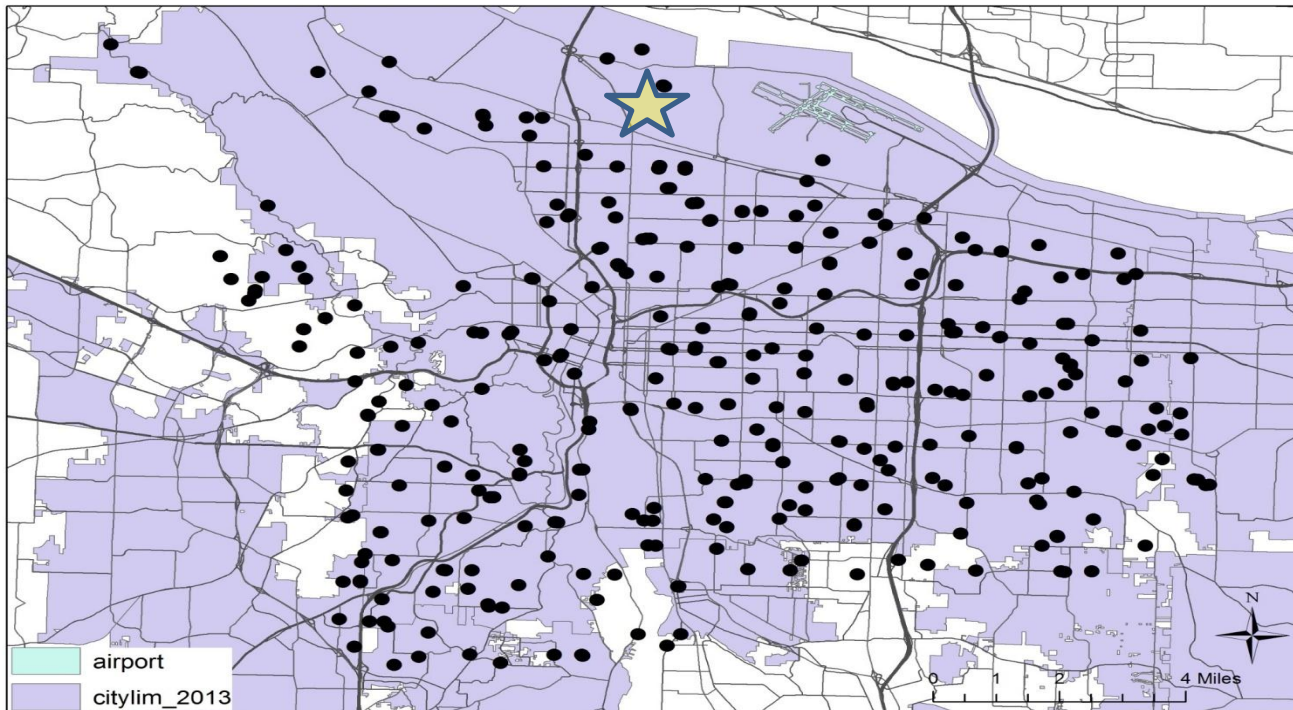
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Initial moss sampling - 2013

Moss samples = 346 in 2013

Air quality monitor 

PDX-wide



Source: USFS

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Portland Air Monitoring - 2016



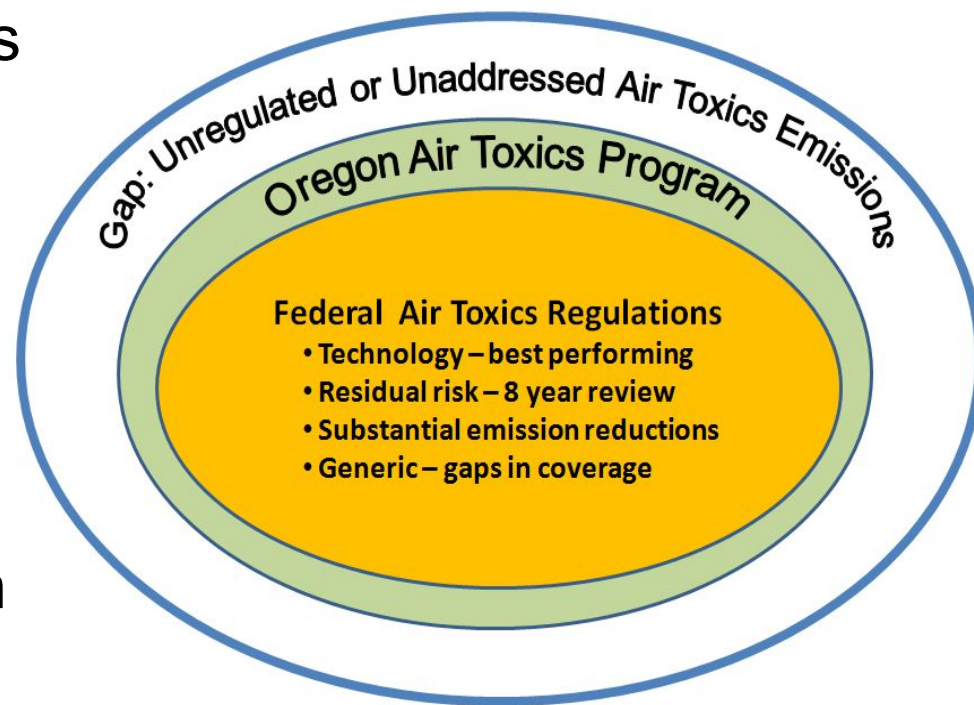
Equipment at SE Powell and 22nd

Monitoring Included:

- 12 different sampling locations
- 10 metals
- 3 meteorological stations

Cleaner Air Oregon regulations

- Existing regulations reduce toxics for many facilities
- But they have gaps
 - Based on federal regulations that aren't Oregon-specific
 - Don't cover all industry types and toxics
 - Don't account for how toxics affect the health of people living near facilities
- New opportunity for regulations that address health



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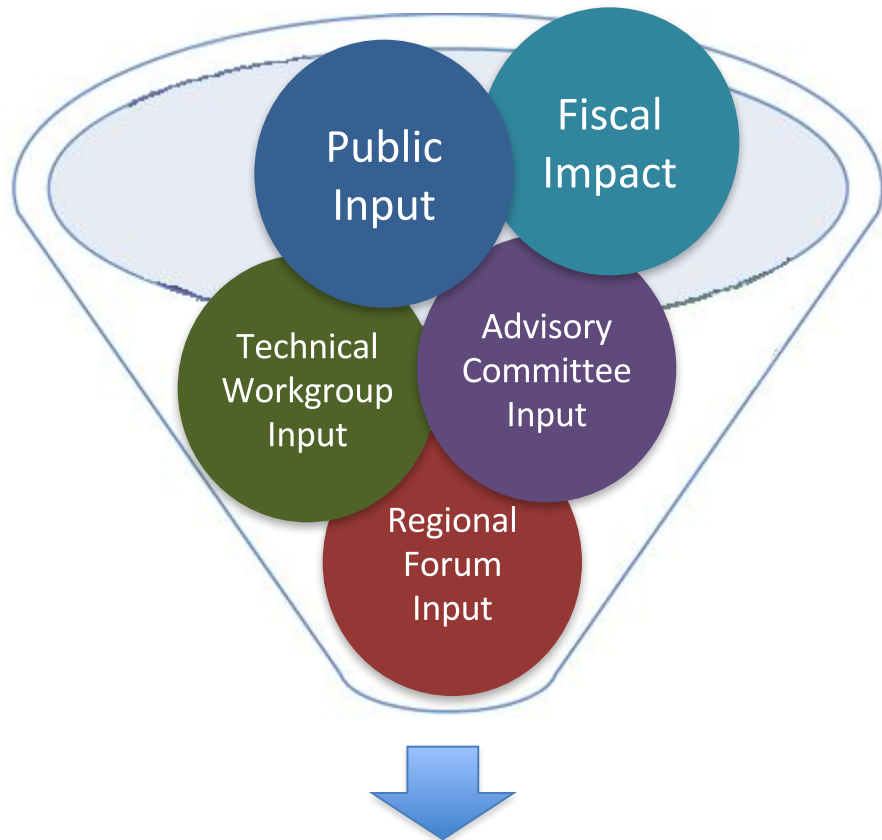
What Cleaner Air Oregon Will Do



- Assess and monitor current and ongoing emissions of industrial air toxics.
- Set health-based limits on emissions of industrial air toxics.
- Provide regulatory certainty to businesses.
- Assure the public that government is protecting public health appropriately.

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Policy Development for Cleaner Air Oregon



Draft Regulations

Rulemaking schedule

- Spring – Summer 2016: Technical review of programs in other states.
- Fall 2016 - Summer 2017: Rule development, fiscal analysis, with advisory committee review.
- Summer - Fall 2017: public comment on draft regulations.
- Fall 2017- Winter 2018: Agencies consider public comment and formulate proposal for the Environmental Quality Commission.
- Spring 2018: Environmental Quality Commission to consider rule adoption.

Draft Framework for Cleaner Air Oregon

- The Framework is a means to focus the advisory committee on key policy questions.
- The Framework is a *starting point* for discussion. It is high-level and structured to identify a range of possible outcomes.
- Draft rule language and the fiscal impact statement will be developed after input on the Framework, and then discussed later - at May and June advisory committee meetings.

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Cleaner Air Oregon Rules Advisory Committee

- Rules Advisory committee process underway
 - Using input from technical workgroup, regional forums and agency analysis, the rules advisory committee is discussing and considering:
 - Program scope
 - Pollutant scope and setting risk based concentrations
 - Setting and achieving acceptable risk levels
 - Cumulative risks
 - Screening and risk assessment
 - Implementation

Program Scope

- New, modified and existing industrial facilities.
- Categorical exemptions for low-risk facilities.
- Range of air toxics:
 - Reporting on ~660 toxic air pollutants;
 - Regulate only pollutants for which we have authoritative health risk information (~215 chemicals or families of chemicals).

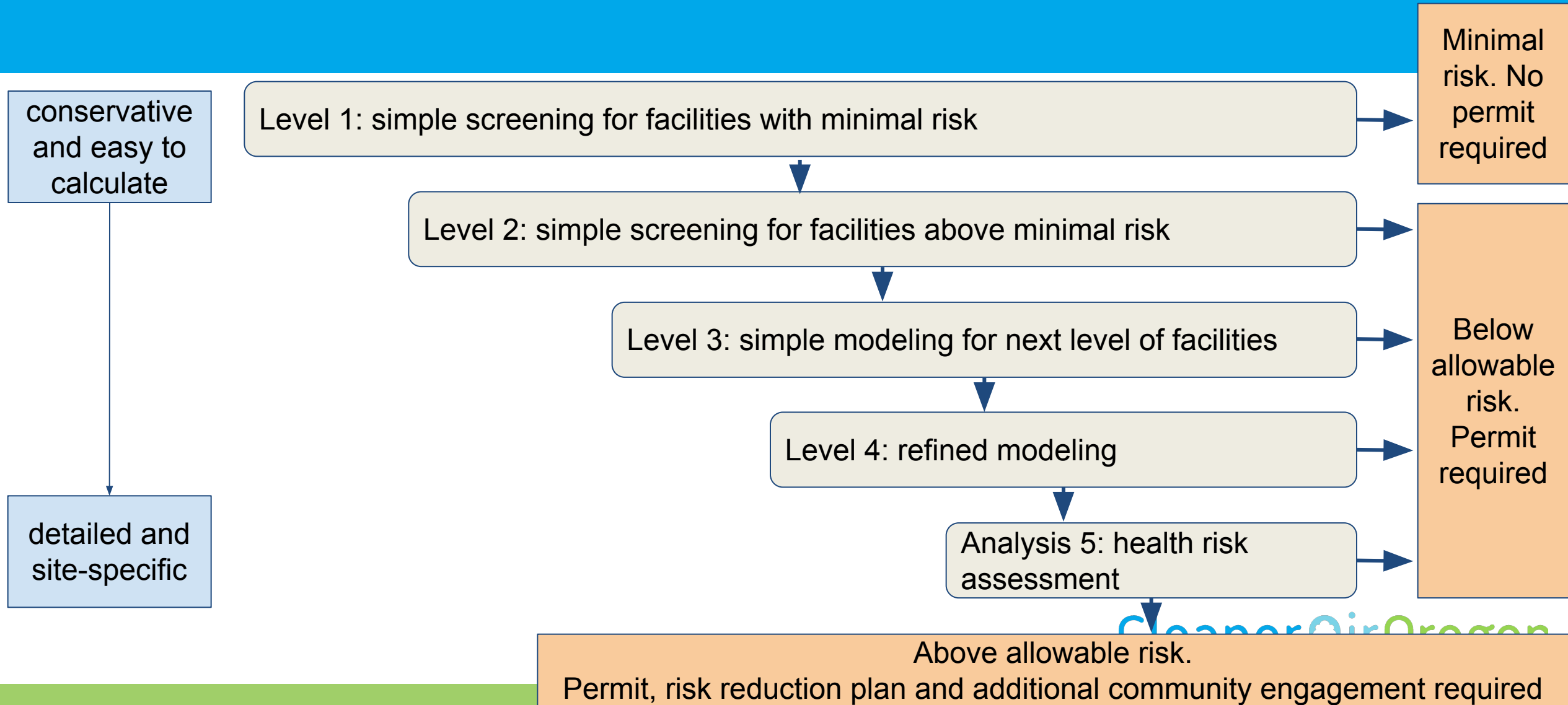
Risk Levels

- Risk-based concentrations (RBCs) from authoritative sources:
 - Chronic cancer risk (annual)
 - Chronic non-cancer risks (annual)
 - Acute non-cancer risks (24 hour)

Allowable Risk

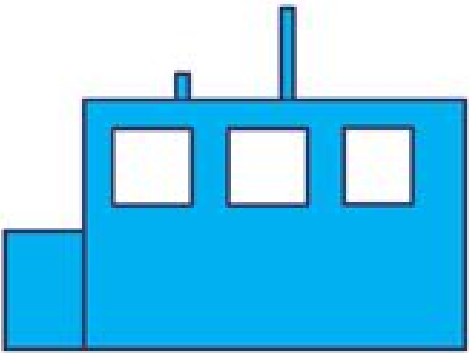
- De minimis risk: 0.5 in 1 million / HI 0.5
- Allowable risk for new and existing facilities:
 - Cancer Risk: 10 in 1 million
 - Non-cancer risk: hazard Index of 1

Progressively Refined Risk Assessment



A hypothetical example

First, a facility would need to calculate their emission rates.



Toxic Air Pollutant	Max Annual Emission Rate (pounds/year)	Max Daily Emission Rate (pounds/day)
Chemical A	100	1
Chemical B	30	1
Chemical C	50	1

Reference Emission Rates (RERs)

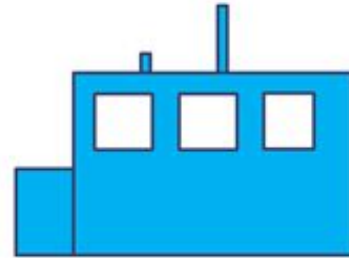
- Initial screening tool - no modeling required
- Agencies back-calculate RERs using Risk-Based Concentrations (RBCs) and conservative default modeling parameters (short stack height, short squat building, low wind speed).
- Would be listed in a table in the rule, could be changed through rulemaking as new science becomes available

How to use RERs

- One chemical can have up to 3 RERs, for different risk types
 - chronic cancer
 - chronic noncancer
 - acute noncancer
- Risk estimate for one chemical = $\frac{emissions}{RER}$
- Risk estimate for all chemicals emitted by a facility = $\sum_{chemicals} \frac{emissions}{RER}$

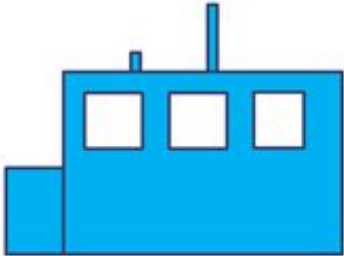
Reference Emission Rates (RERs)

Toxic Air Pollutant	Chronic Cancer RER	Chronic Noncancer RER	Acute Noncancer RER
	(pounds/year)		(pounds/day)
Chemical A	10	120	2
Chemical B	20	N/A	4
Chemical C	100	2,000	5



Analysis 1: cancer risk analysis

Toxic Air Pollutant	Emission Rate			Chronic Cancer RERs	Ratio ER/RER
	(pounds/year)				
Chemical A	100	/	10	=	10
Chemical B	30	/	20	=	1.5
Chemical C	50	/	100	=	0.5
			TOTAL		12

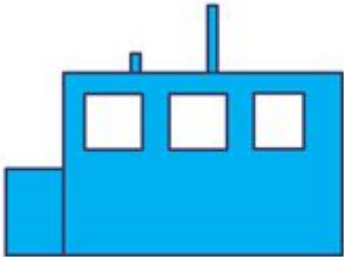


Sum of Ratios



Analysis 1: noncancer risk analysis

Toxic Air Pollutant	Emission Rate	Chronic Noncancer RERs		Ratio ER/RER
	(pounds/year)			
Chemical A	100	/	120	= 0.83
Chemical B	30	/	N/A	= N/A
Chemical C	50	/	2,000	= 0.03
		TOTAL		0.86



Sum of Ratios

Toxic Air Pollutant	Emission Rate	Acute Noncancer RERs		Ratio ER/RER
	(pounds/day)			
Chemical A	1	/	2	= 0.5
Chemical B	1	/	4	= 0.25
Chemical C	1	/	5	= 0.2
		TOTAL		0.95

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Analysis 1 results

Risk Type	Sum of Ratios	De Minimis Level	Is Below?
chronic cancer	12	0.5	N
chronic noncancer	0.86	0.5	N
acute noncancer	0.95	0.5	N

If all three were below 0.5, the facility would screen out as de minimis.

*For de minimis facilities, no permit or annual reporting required.
Facility data would be kept in a database and available for records requests.*

But, they're not, so this facility has to proceed to analysis #2.

De minimis risk levels:

≤ 0.5 in 1 million cancer risk

≤ 0.5 hazard index for chronic and acute noncancer

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Analysis 2 results

Risk Type	Ratio ER/RER	Allowable Risk	Is Below?
chronic cancer	12	10	N
chronic noncancer	0.86	1	Y
acute noncancer	0.95	1	Y

If all three of these were below allowable risk, the facility would comply with allowable risk levels at the analysis 2 level.

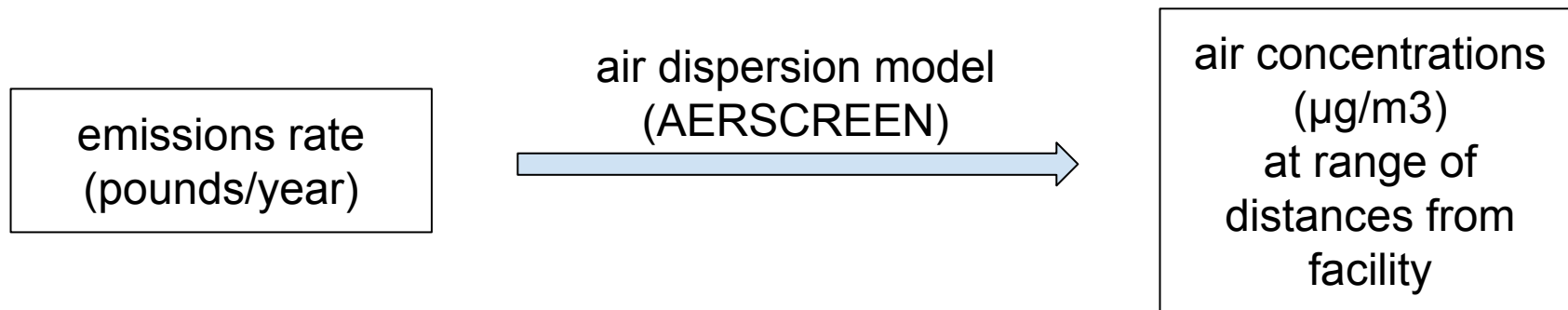
*Permit and annual reporting would be required.
Opportunity for public comment as part of permitting process.*

But, they're not, so this facility has to proceed to analysis #3.

Individual facility allowable risk:
 <= 10 in 1 million cancer risk
 <= 1 hazard index for chronic and acute noncancer

Analysis 3: AERSCREEN modeling

- Facilities that don't screen out in analyses 1 and 2 can do more site-specific analysis 3 using the AERSCREEN air dispersion model.
- AERSCREEN uses conservative defaults for some parameters like weather, but uses some site-specific parameters like stack height and distance to where people could be exposed.



Risk-Based Concentrations (RBCs)

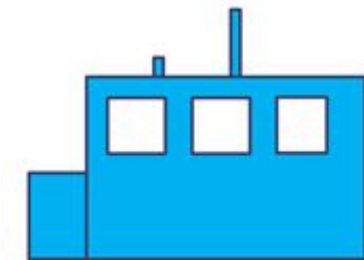
- Calculated by DEQ and OHA
- Air concentration that would pose a 1 in 1 million cancer risk or a hazard quotient of 1.
- Would be available for lookup in the rule, could be changed through rulemaking as new science becomes available

How to use RBCs

- Risk estimate for one chemical = $\frac{\text{model output concentration}}{RBC}$
- Risk estimate for all chemicals emitted by a facility = $\sum_{\text{chemicals}} \frac{\text{model output concentration}}{RBC}$

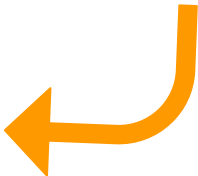
Analysis 3: cancer risk analysis

Risk estimate calculation using AERSCREEN model results and RBCs



Toxic Air Pollutant	Emission Rate (pounds/year)	Modeled Concentration (µg/m3)	Chronic Cancer RBC (µg/m3)	Ratio modeled conc/RBC
Chemical A	100	0.075	0.01	7.5
Chemical B	30	0.023	0.02	1.1
Chemical C	50	0.038	0.1	0.4
			TOTAL	9

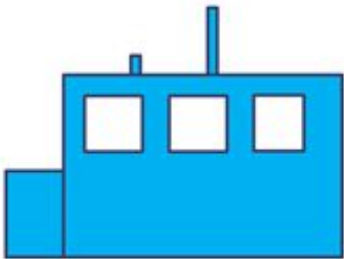
Sum of Ratios



Analysis 3: noncancer risk analysis

Toxic Air Pollutant	Emission Rate (pounds/year)	Modeled Concentration (µg/m3)	Chronic Noncancer RBC (µg/m3)	Ratio modeled conc/RBC
Chemical A	100 →	0.075	/ 0.12	= 0.63
Chemical B	30 →	0.023	/ N/A	= N/A
Chemical C	50 →	0.038	/ 2	= 0.02
			TOTAL	0.64

Toxic Air Pollutant	Emission Rate (pounds/day)	Modeled Concentration (µg/m3)	Acute Noncancer RBC (µg/m3)	Ratio modeled conc/RBC
Chemical A	1 →	0.075	/ 0.2	= 0.38
Chemical B	1 →	0.075	/ 0.4	= 0.19
Chemical C	1 →	0.075	/ 0.5	= 0.15
			TOTAL	0.71



Sum of Ratios

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Analysis 3 results

Risk Type	Sum of Ratios of modeled concentration/ RBC	Allowable Risk Limit	Is Below?
chronic cancer	9	10	Y
chronic noncancer	0.64	1	Y
acute noncancer	0.71	1	Y

All three are under the facility allowable risk, so facility complies with allowable risk levels at the analysis 3 level.

Permit and annual reporting required. Opportunity for public comment as part of permitting process.

Individual facility allowable risk:

<= 10 in 1 million cancer risk

<= 1 hazard index for chronic and acute noncancer

If they hadn't been below, they could proceed to more detailed modeling.

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If facility allowable risk is exceeded

If a facility is still above the allowable risk level after detailed analysis (#1-5)

Option 1:

- Require Risk Reduction Plan
- Require Community Engagement Plan

Option 2:

- Conditional Risk Level
- Require Community Engagement Plan

Risk Reduction Plan

- Pollution prevention
- Product substitution
- TBACT
- Enforceable internal offsets
- Any method to get under allowable risk levels



Community Engagement Plan

Community engagement plans would do the following:

- Identify community groups and potentially sensitive populations, including nearby schools and daycare facilities, that should be routinely included in important correspondence;
- Tailor public notification and engagement efforts to ensure that potentially sensitive populations are reached;
- Establish a phone line and email address to accept complaints;
- Establish a community committee or other forum for communication between community members and the facility contact;



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Conditional Risk Level - definition

If a facility:

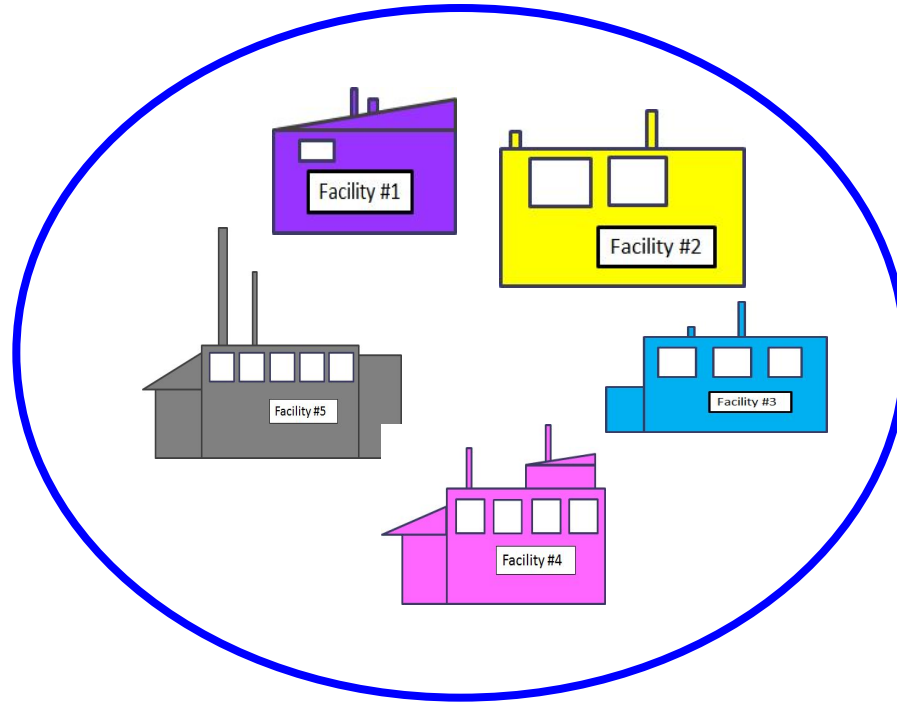
- Has TBACT (or equivalent) installed on all non-exempt emissions units; and
- Cannot comply with the Facility Allowable Risk Level, then facility:
 - Can apply for a Conditional Risk Level
 - Must review TBACT every 5 years
 - Must review new technologies annually for emissions units where feasible TBACT controls do not exist

Cumulative Risk

- Limit cumulative risk from:
 1. All chemicals emitted by an emissions unit;
 2. All emissions units at a facility; and
 3. All industrial facilities (other than minimal risk) that affect a given area.
- Considering a range of risk management levels for #3 (between 20-80 in 1 million / HI 2-4).

Area Allowable Risk - proposed range

Proposed range of 20 to 80 in 1 million and HI 2-4:



Area Allowable Risk - defining areas

Steps for DEQ:

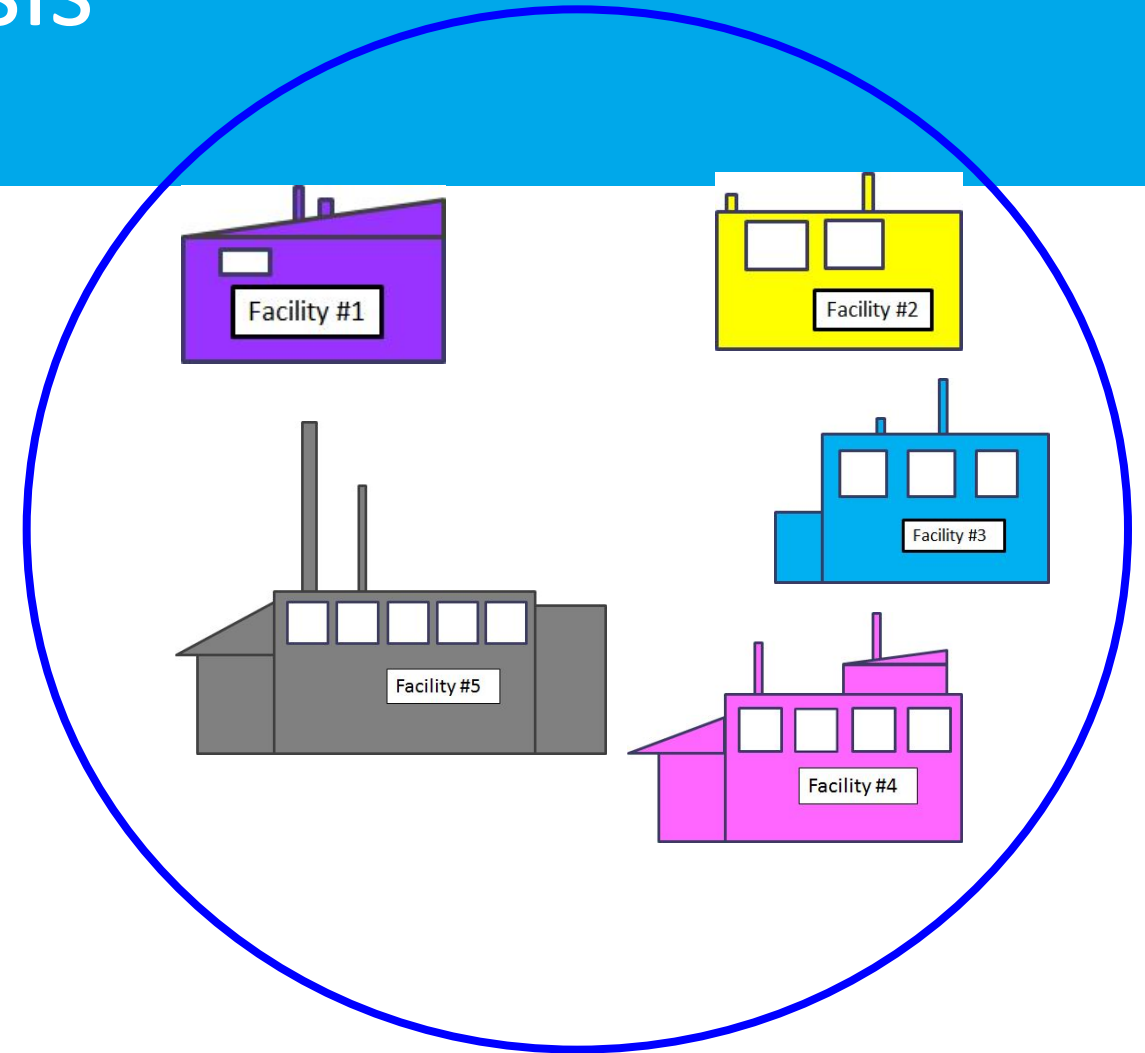
1. Define areas with multiple sources that emit Toxic Air Pollutants
2. Identify sources > de minimis risk level (permitted and unpermitted)
3. Model sources in each area using emissions, actual stack parameters and local meteorological data to estimate worst case risk impacts

Area Allowable Risk - analysis

Steps for DEQ: (continued)

4. Determine if risk in any area is
>20-80 in 1 million or HI > 2-4

5. If risk below 20-80, new/modified
facilities can increase impacts up to
20-80.

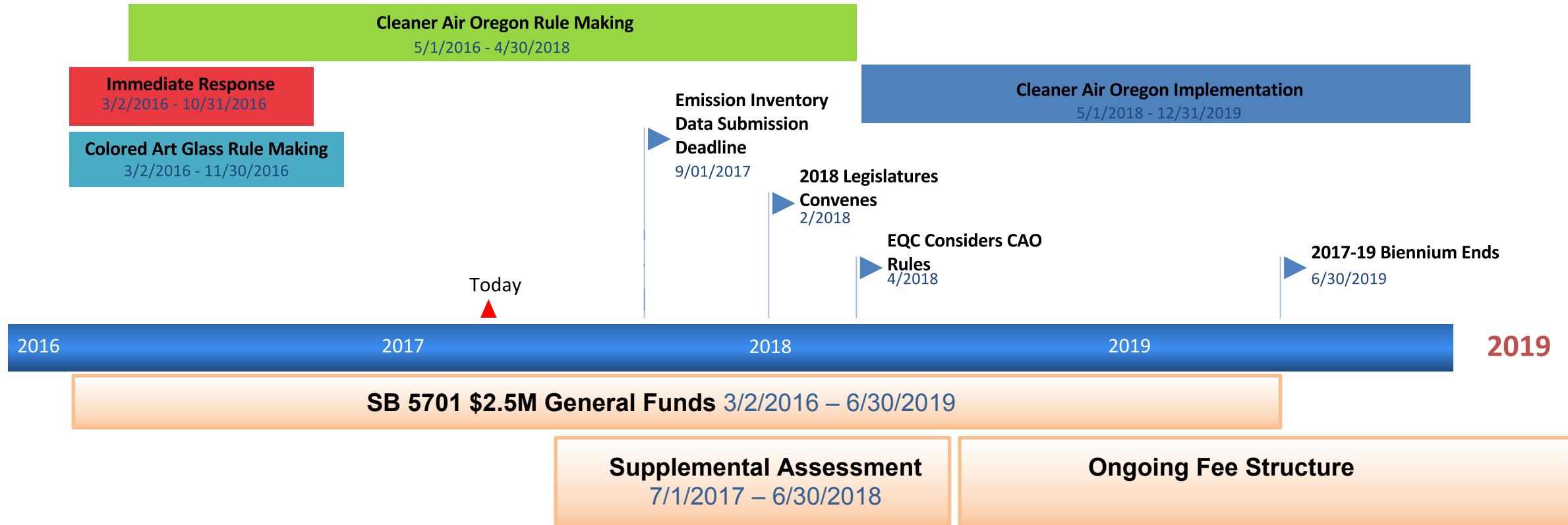


Area Allowable Risk - exceedance

Source	Allowable Risk Level	Actual Cancer Risk	Allowable Area Risk	Below?
Facility 1	0.5	0.45		
Facility 2	10	0.75		
Facility 3	10	9		
Facility 4	10	7.6		
Facility 5 (with TBACT)	10	32		
TOTAL		50	40	No

New Facility 6?	10	8		no permit issued
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Activities and Funding Streams



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Cleaner Air Oregon Funding Streams

SB 5701 (Feb 2016) \$2.5 million General Funds

How we used the funds thus far:

- Respond to air toxics concerns in Portland Area
- Set-up two full range air toxics sites
- Set-up two metals monitoring sites
- Rule-making for colored art glass facilities
- Launch Cleaner Air Oregon rule making

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Cleaner Air Oregon Funding Streams

SB 5701 (Feb 2016) \$723K General Funds, 3.00 FTE

How DEQ will use the funds between July 1, 2017 and June 30, 2018

- Air toxics assessment, review monitoring and modeling data
- Manage CAO effort
- Analyze Emissions Inventory (EI) data
- Calculate emissions for general and basic permitted facilities (ex: dry cleaners, gas stations, small boilers etc.)
- Organize and manage EI data on website
- Manage communications

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Cleaner Air Oregon Funding Streams

HB 2269 \$1.1 million Proposed Supplemental Assessment

- Modeling, meteorology, data investigation
- Apply RBC's to emission sources and gather facility parameters
- EI data analysis to screen facilities
- Update data systems (EI and Invoicing/Accounting)
- Rule writing, fee and program development
- Stakeholder and public engagement

Cleaner Air Oregon Fee Table

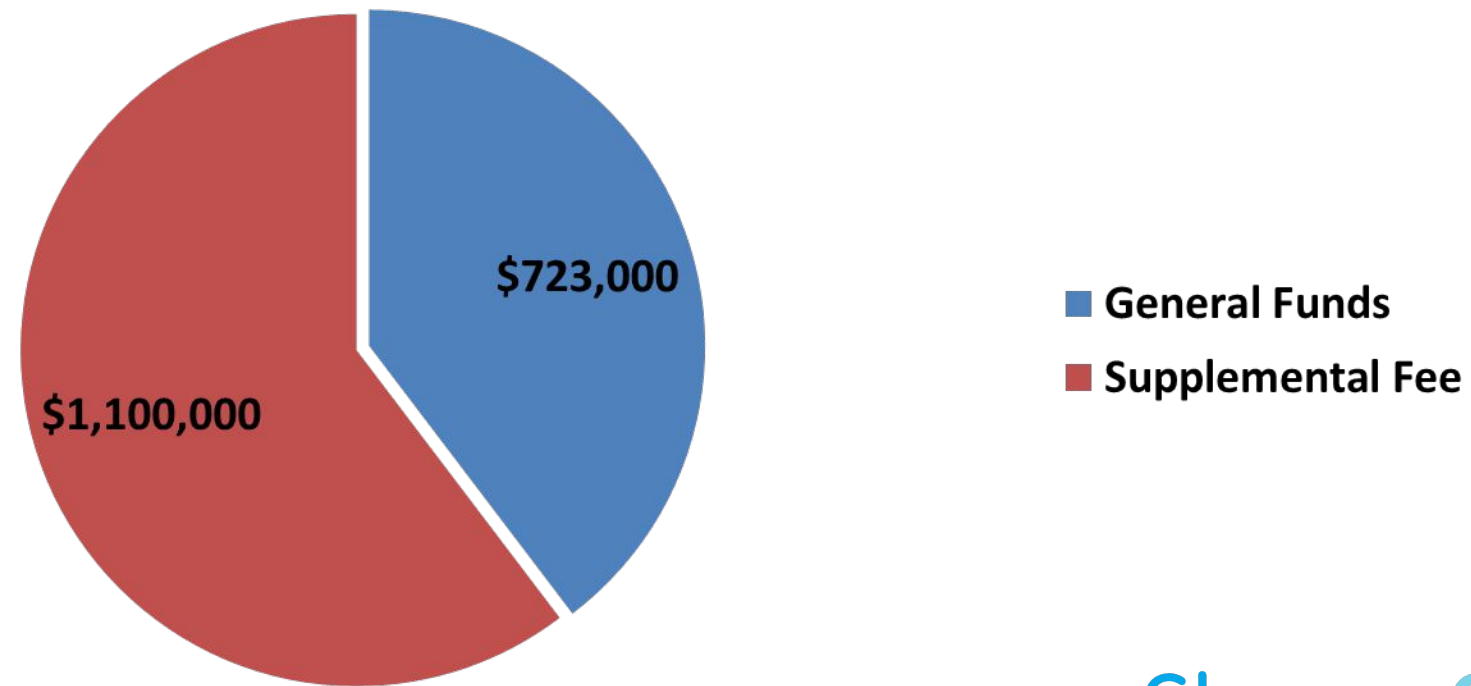
Package 116: CAO One-Time Supplemental Assessment						
Permit Type	Facility examples	Permit holders (as of 3/2/17)	CY 2017 Annual Fee	One-time assessment	Percent Increase	Supplemental Fee Revenue Estimate*
ACDP Basic	Autobody painting shops	105	432	68	16%	6,689
ACDP General Class one	Cement ready-mix plants	357	864	137	16%	51,260
ACDP General Class two	Rock crushers	291	1,555.00	246	16%	71,255
ACDP General Class Three	Hard Chrome Plating	126	2,246.00	355	16%	42,275
ACDP General Class Four	Wood Preserving	374	432	68	16%	25,425
ACDP General Class Five	Gasoline Dispensing	806	144	23	16%	18,327
ACDP General Class Six	Dry Cleaners	80	288	46	16%	4,095
ACDP Simple (Low Fee)	Coffee roaster, criteria pollutant emission & attainment dependant	59	2,304.00	364	16%	21,842
ACDP Simple (High Fee)	Coffee roaster, emission dependant All simple sources not qualifying for the low fee must pay the high fee.	85	4,608.00	728	16%	61,885
ACDP Standard	Incinerators for PCBs/Hazardous waste. Standard ACDP depends on: PSEL above generic limits, source complexity, past violations, etc.	134	9,216.00	1456	16%	195,121
Title V Annual Base Fee		108	8,010.00	1256	16%	135,590
Title V Emission Fee			60.56 /per ton	9.49 /per ton	16%	462,026
Total		2525				1,095,790

* Supplement fee is a one-year assessment to stand up the air toxics permitting program prior to the new permit fee table taking effect in July 2018.

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Program Development Funding Streams

Cleaner Air Oregon Development FY18



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Supplemental Fee Legislation

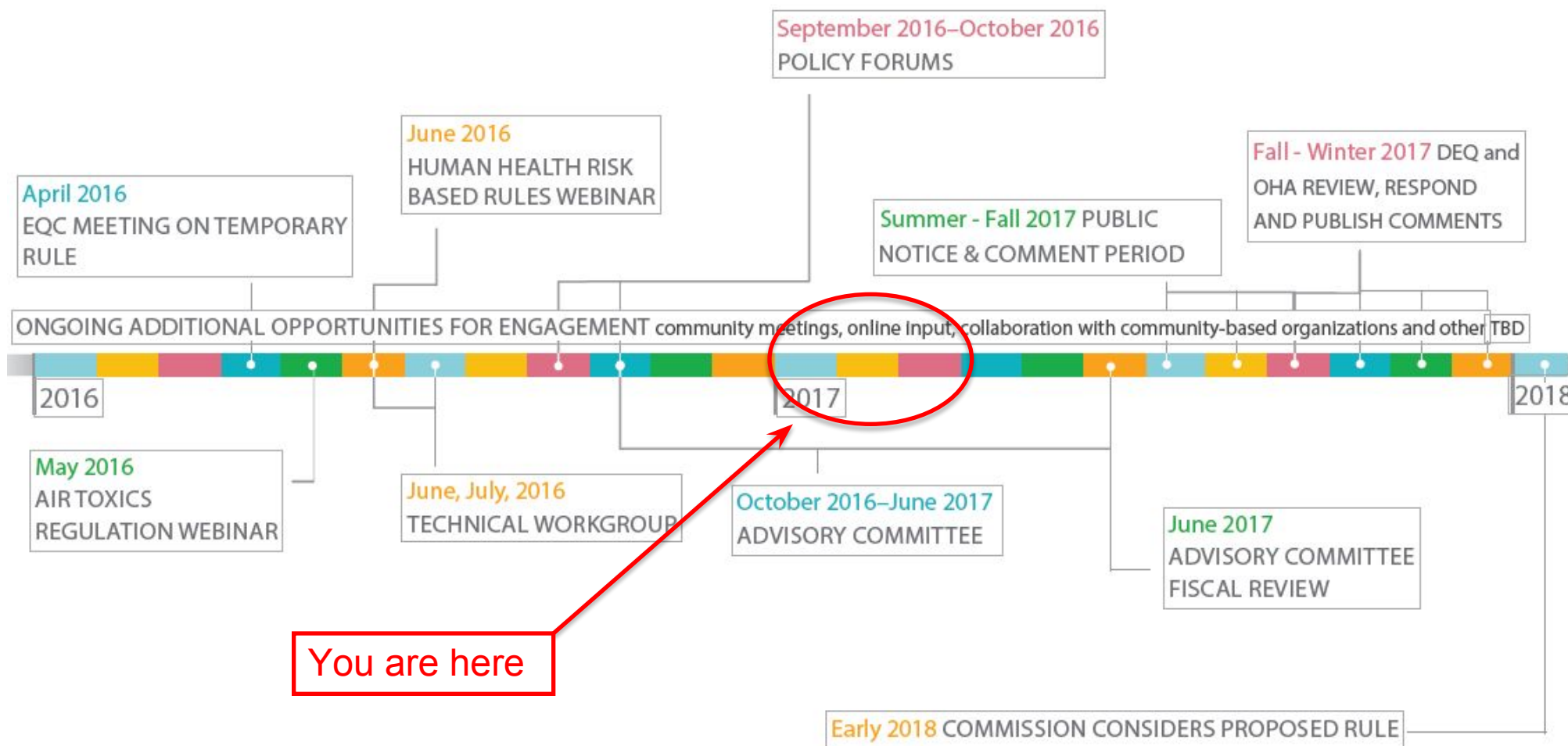
HB 2269 A: Air Toxics Bill

- CAO Fee Assessment, VW Settlement, Civil Penalty Authorization
- Work Session (4/12/2017)
- Ways and Means

Implementation Fees

- DEQ and OHA will report on emissions inventory to the legislature in Winter 2017-18
- DEQ will return to the Legislature in 2018 (for approval of fees), before rules are adopted
 - RAC process will inform proposed fee structure

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CREATING HUMAN HEALTH-BASED
INDUSTRIAL AIR TOXICS REGULATIONS
Timeline for public engagement that fosters active participation



Thank you for your interest in Cleaner Air Oregon



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