



Part I: Updates on Proposed Guidance and Technical Bulletins

Part II: Overview of new Technical Bulleting on Assessment Values [linked to annual standards]

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Purpose of Presentation

- Part I: To provide an overview of proposed updates to:
 - Guidance Documents
 - New and Updated Technical Bulletins
- Part II: Overview of
 - Annual Standards
 - Proposed new “Technical Bulletin” on Methodology for Using “ASSESSMENT VALUES” for contaminants with annual air standards

Part I: Guidance

- Guidance Documents:
 - Procedure for Preparing an Emission Summary and Dispersion Modelling Report [ESDM Procedure*];
 - Guideline for the Implementation of Air Standards in Ontario [GIASO];
 - Air Dispersion Modelling Guideline for Ontario [ADMGO]; and
 - Guide to Applying for a Site-Specific Standard (currently known as Guide to Applying for Alternative Standards [GRAAS])

Proposed Updates to Guidance Documents

- Guidance documents updated by MOECC internal working group (which includes SDB, EAB, EMRB, Operations Division (WCR), and Legal Services).
- Updates to the existing Guidance material to include:
 - new guidance resulting from changes brought in by the 2011 amendments (i.e. annual standards, etc).
 - updates to include changes from earlier regulatory amendments (2009) (e.g. renumbering of sections, technical standards, EASRs, etc); and
 - other suggestions by stakeholders to improve clarity.
- Incorporate messaging from communication products (July 2013 Fact Sheets).

ESDM Procedure Document

- Proposed Updates include:
 - Guidance on ESDM requirements for facilities with some contaminants registered in Technical Standards
 - Reference to EASRs
 - Source Summary Table:
 - In addition to the Emission Summary Table, suggesting the Source Summary Table that is organized by contaminant be included in the ESDM report.
 - Need to be more clear on Source ID [can be difficult to co-relate source IDs used in model runs and source summary tables with the more detailed descriptions of sources used elsewhere in the report].
 - New Appendix for ESDM Procedure: GUIDANCE FOR STANDARDS WITH ANNUAL AVERAGES: ESTIMATION OF PARTICULATE EMISSIONS FROM PAVED AND UNPAVED ROADS (based on recognize US EPA guidance for Ontario context)
 - Guidance on emission estimates for annual standards

Modelling for Annual Values

- AERMOD does not output the maximum POI for each meteorological year unless each year is modelled separately. It will average all the meteorological conditions per grid point to produce one maximum POI concentration based on the annual emission rate (typically 5 years is used).
- In order to avoid complex post-processing steps, it may also be acceptable to do one model run, using the appropriate five-year regional meteorological data set or a site-specific meteorological data set approved for that site under s.13 of the Regulation, if applicable.
- The maximum annual POI could then be multiplied by 140 % and this number would be compared to the annual value (e.g. AAV). This is intended to act as a conservative screening check.
- If 140% of the averaged model results is more than that the annual value, then individual model runs must be conducted for each of the five years of meteorological data or the site-specific meteorological data.

Proposed Technical Bulletins

- Proposed New/Updated Technical Bulletins that are proposed to be published as stand alone documents:
 - COMBINED ASSESSMENT OF MODELLED AND MONITORED RESULTS (CAMM) AS AN EMISSION RATE REFINEMENT TOOL (currently Appendix E of ESDM Procedure Document)
 - METHODOLOGY FOR USING “ASSESSMENT VALUES” FOR CONTAMINANTS WITH ANNUAL AIR STANDARDS under O. Reg. 419/05 (new)
 - Update of REVIEW OF APPROACHES TO MANAGE INDUSTRIAL FUGITIVE DUST SOURCES (currently Appendix F of ESDM Procedure Document)

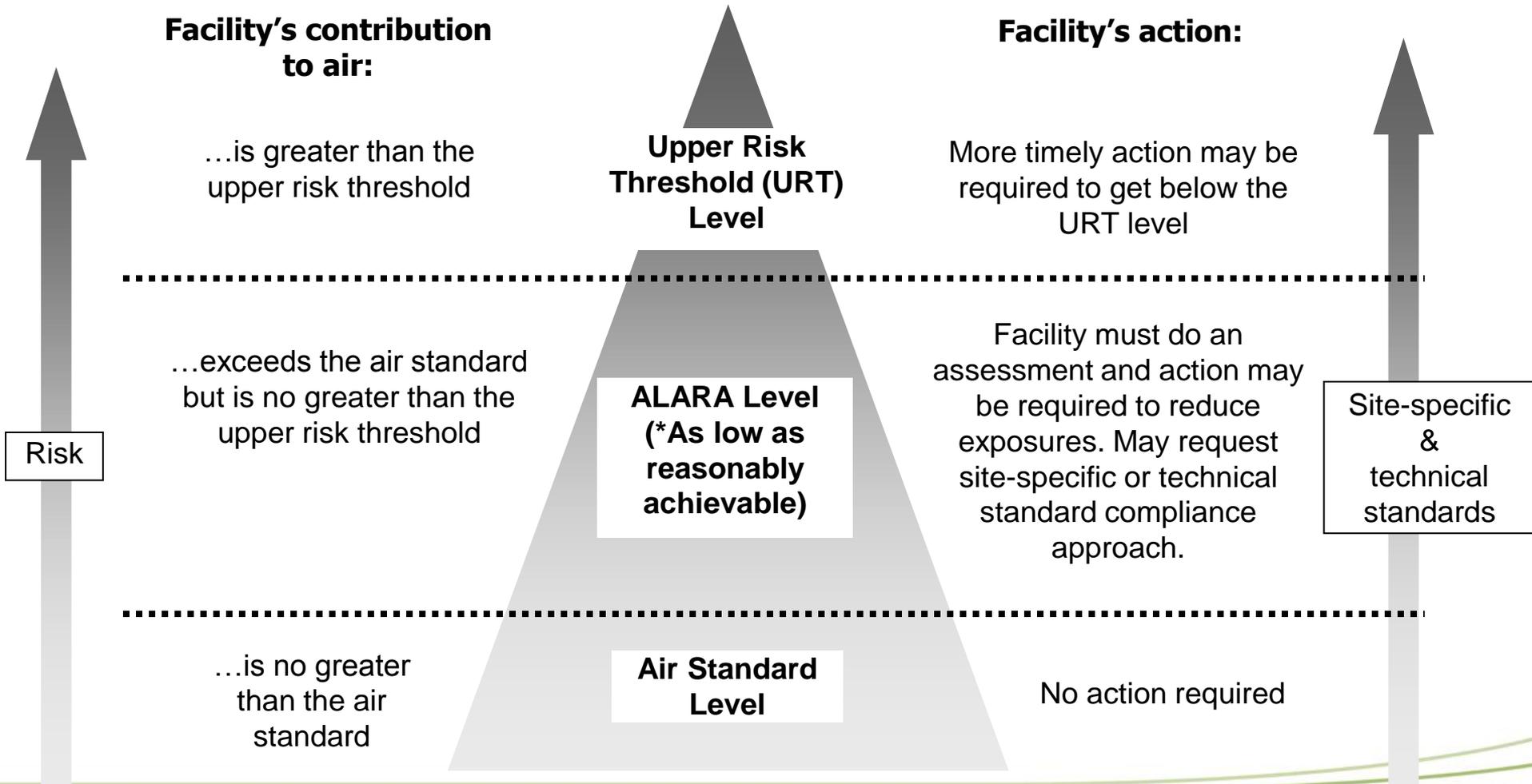
ADMGO

- Remove references to all ISC models
- Include reference to AERSCREEN as an alternative model
- Other general updates based on amendments

GIASO/Guide to Applying

- Change terminology to site-specific standards (formerly alternative standards)
- Draft guidance on “greenfield” facilities and expansions
 - CAMM
 - Technology Benchmarking
- Reference to method to assess cost-effectiveness
- Added reference to Technical Standards compliance approach
- Re-organization of risk scoring methodology (mainly used in cost-effectiveness assessments)
- Re-messaging for Framework to Manage Risk

Framework for Managing Risk



Part II: Annual Standards

- Reminder of new/updated Annual Standards that come into effect July 1, 2016
- Overview of Proposed new guidance in “Technical Bulletin” - **METHODOLOGY FOR USING “ASSESSMENT VALUES” FOR CONTAMINANTS WITH ANNUAL AIR STANDARDS**

New/Updated Air Standards with Annual Averaging Times

Air Standards - effective July 1, 2016

Substance	Schedule 3		Schedule 2	
	$\mu\text{g}/\text{m}^3$		$\mu\text{g}/\text{m}^3$	
Benzene	0.45	annual	7	1/2 hr
1, 3-Butadiene	2	annual	30	1/2 hr
Chromium (VI)	0.00014	annual	0.0021	1/2 hr
Nickel and Nickel Compounds	0.04	annual	0.6	1/2 hr
Benzo-a-pyrene (as a surrogate for PAHs)	0.00001	annual	0.00015	1/2 hr
Uranium and Uranium Compounds (PM10 fraction)	0.03	annual	0.45	1/2 hr

NEW Compliance Assessment for Annual Standards

- New guidance is being developed when assessing compliance with a standard with an annual average. This would include evaluating two operating scenarios in an ESDM Report:
 - A) maximum annual emission rate; B) maximum 24 hr emission rate
- **(A) Maximum Annual Emissions:** Evaluates the maximum predicted annual POI using emissions averaged over the year to compare against an annual standard:
 - New guidance for assessment of compliance against the annual average standard under development for consultation
- **(B) Maximum 24 hr Emissions:** Continue to evaluate the maximum predicted 24 hr POI using peak or maximum 24 hr emissions in order to check against periods of elevated exposure:
 - Already used to assess Upper Risk Thresholds (URTs)
 - Develop new Assessment Values to evaluate maximum emissions that can occur but do not occur every day
 - Will likely address batch or intermittent operations
 - New guidance for assessment values (proposed technical bulletin) developed for consultation

* Both operating scenarios are still for operating conditions that result in the maximum POI.

Background

- During stakeholder engagement on air standards development, the consensus was that air standards for carcinogens could be set directly from the toxicology studies, based on an annual averaging period.
- Stakeholders also agreed that some oversight of day to day variation was warranted to control periods of elevated exposure (which is normally achieved by converting the annual average).
- In response, the Ministry has worked to develop an approach for annual air standards and supporting short-term values that meets operational needs while considering potential adverse effects.

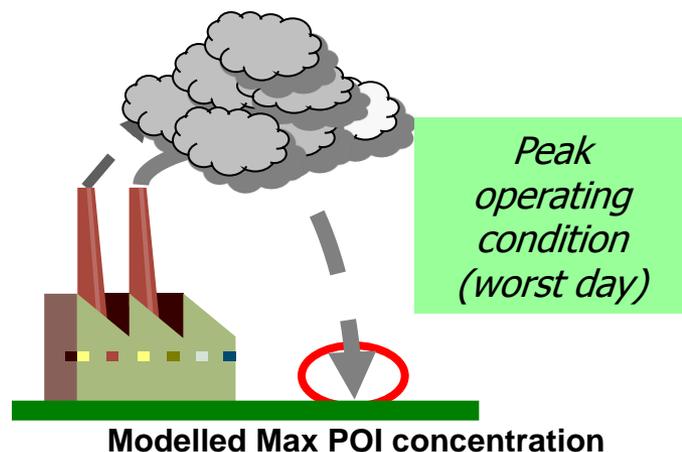
New Assessment Values

- Ministry investigated alternative approaches for non-regulatory values that would be consistent with the EWG's consensus points in March 2010 and with Ministry operational needs.
- A new approach for modelling was conceived based on the risk-based approach that underpins the annual standard:

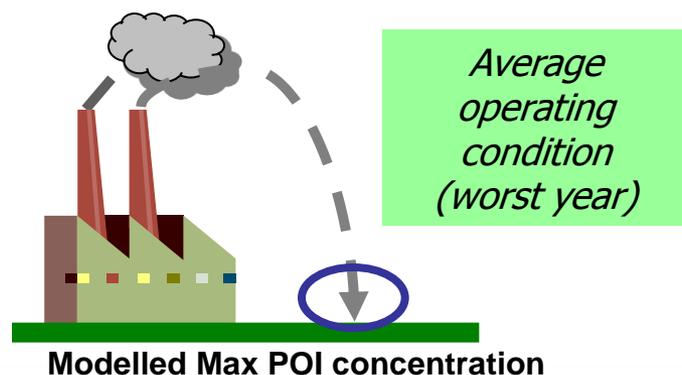
Annual standard (annual POI) = 10^{-6} risk benchmark

- Risk-based Daily Assessment Value (DAV) equivalent to Upper Risk Threshold (24-hr POI) = 10^{-4} (annual) x 5 (conversion factor) (*modelled using worst day operations*)
- Risk-based Annual Assessment Value (AAV) (annual POI) = 10^{-5} risk benchmark (*modelled using worst day operations*)
- *Exceeding either URT, DAV or AAV triggers further assessment*

Overview of Assessment Values (used with Annual Standards) - Modelling

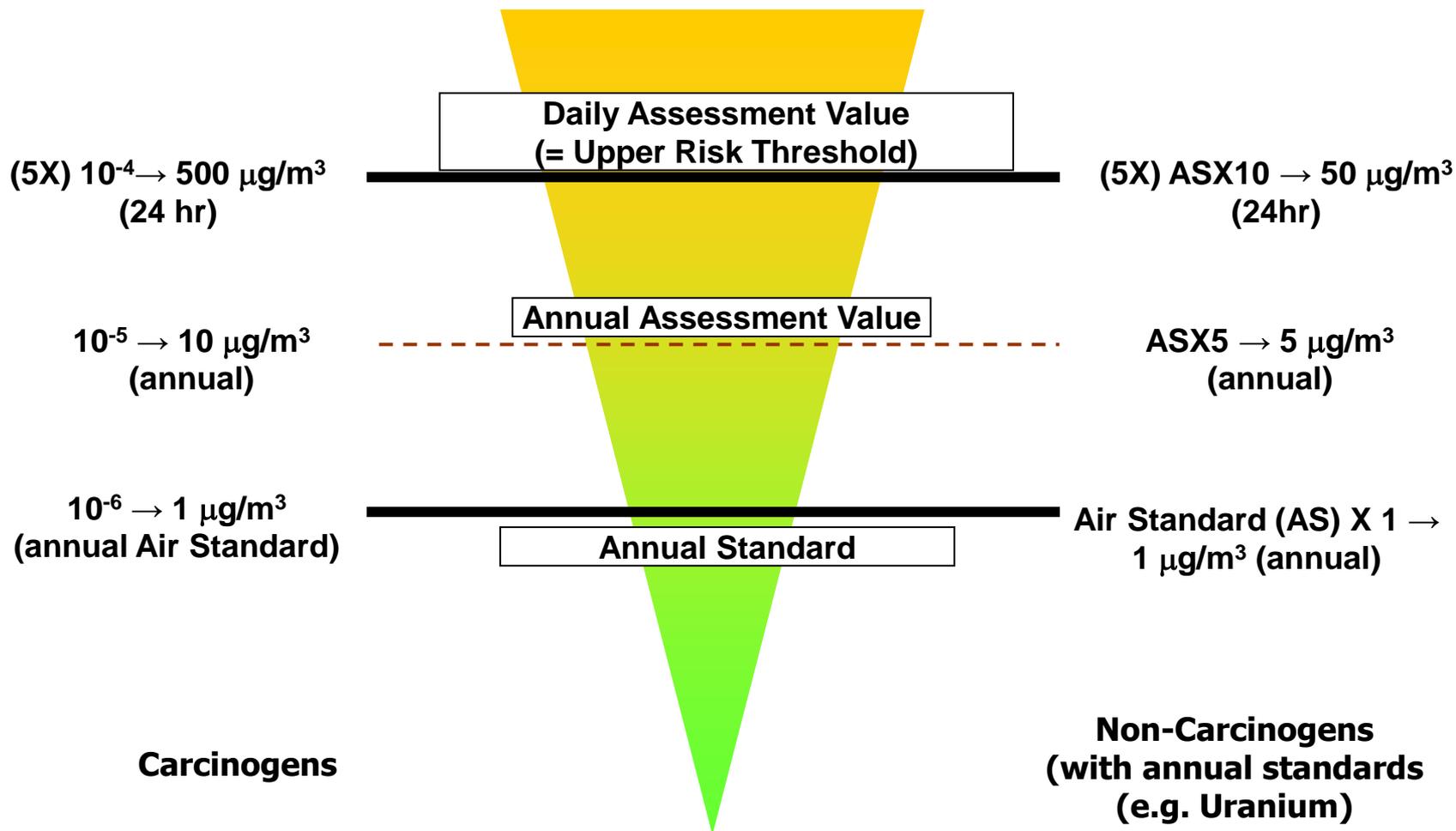


- Assessment values are used to evaluate exposures expected based on a worst case operating condition, based on worst day's emissions
 - DAV (= URT) used to assess maximum 24-hr exposure
 - AAV used to assess average exposure over the year if peak operations were maintained



- Annual standards are used to evaluate the annual average exposure modelled using the worst year of emissions (operating conditions averaged over the year)

Example of Assessment Values (e.g. Annual Standard is 1ug/m³)



Assessment Values – for Modelling (see also slide 6)

Substance	Annual Standard	Annual Assessment Value (AAV)	URT / Daily Assessment Value (DAV)
Cr(VI)	0.00014	0.0014	0.07
1,3-butadiene	2	20	300
Benzene	0.45	4.5	100
Nickel	0.04	0.4	2
Uranium**	0.03	0.15	1.5
BaP	0.00001	0.0001	0.005

Assessment Values - Monitoring

- Based on conversion factors:
 - Conversion factor is tied to the original effect-based standard through a meteorological adjustment of averaging times – modelling of a short-term value (e.g., 24-hr or $\frac{1}{2}$ hr) can indicate potential that annual average may not be met
 - Conversion factor is a useful tool in the absence of monitoring against the annual standard

Assessment Values – for Monitoring

Contaminant	Examples of Conversion-Factor-based Assessment Values*		
	24-hour (5X annual)	1-hr (12.5X annual)	1/2-hour (15X annual)
Chromium Compounds (Hexavalent)	0.0007	0.00175	0.0021
Butadiene, 1,3-	10	25	30
Benzene	2.25	5.6	6.75
Nickel and Nickel Compounds	0.2	0.5	0.6
Benzo(a)pyrene	0.00005	0.000125	0.00015
Uranium and Uranium Compounds [PM 10]	0.15	0.375	0.45

*assessment value for monitoring could be any averaging time

Exceedence of “Assessment Values”

- If the DAV is equal to the URT, then there is already a requirement to notify the ministry immediately in writing, as per section 30 of the Regulation.
 - “Guideline for the Implementation of Air Standards in Ontario” (GIASO) explains that exceedences of the URT require a fully “refined” ESDM report to be submitted within three months which includes an assessment of the frequency of exceedences at the human receptors set out in subsection 30(8) of the Regulation.
- The ministry will most likely become aware of exceedences of an AAV or a other DAV (when $DAV \neq URT$) as follows:
 - included in an ESDM report submitted in the Approvals Process;
 - found in an ESDM report that is required to be prepared, updated and kept available on site in accordance with the Regulation or as part of an ECA condition;
 - recorded in the data collected and/or submitted as part of a monitoring program.
- If a facility assesses an exceedence of an assessment value as part of an ESDM report or in reviewing monitoring results, they should conduct a further assessment.

Exceedence of “Assessment Values”

- ESDMs submitted as part of an ECA:
 - Evaluation of exceedences of an “Assessment Value” would be part of ECA technical review (see next slide).
- Annually Updated ESDMs kept on site:
 - Exceedences of Assessment Values would be addressed at the time of an inspection or reactive (abatement) response; OR
 - During the next ECA review.
- **Note: Notification requirements set out in this draft technical bulletin must not be confused with other regulatory requirements to assess compliance with the annual standard and/or the associated notification requirements for standards under section 28 of the Regulation or notification requirements for URTs under section 30 of the Regulation.**

Exceedence of “Assessment Values”

- **Step 1: Information to consider when conducting further assessment**
 - Check the quality of the information used for the assessment.
 - “Refine” ESDMs as needed.
- **Step 2: Consideration of Toxicological Information**
 - The information collected and assessed in Step 1 should then be used along with the substance-specific toxicology to determine the need for further action.
- **Step 3: Follow-up Actions**
 - Decisions on what action may or may not be necessary will be determined on a case-by-case basis.
 - Depending on the assessment, there are a range of possible actions that may result.
- Refer to draft Technical Bulletin for more details.

Examples of Possible Actions

- Depending on the assessment, there are a range of possible actions that may result. These will be assessed on a case-by-case basis:
 - If the assessment shows there are no concerns and compliance with annual standard is certain, then no further action is necessary.
 - If the ESDM report is part of an annual update (and maintained on site), and the assessment indicates an exceedence of the annual assessment value, then the information in the analysis under Step 1 should be documented in the ESDM report and kept on site. The ministry may require a toxicological assessment as set out in step 2: step 2 can be performed at the next available opportunity for ministry review. If the assessment shows levels that approach a potential for adverse effects, this may lead to further refinement of emissions or a possible mitigation plan.

Examples of Possible Actions

- Depending on the assessment, there are a range of possible actions that may result. These will be assessed on a case-by-case basis:
 - Continued
 - If the exceedence of the assessment value is as a result of a monitored value, there is a need to assess for potential adverse effects (may include a “refined” ESDM report).
 - If the assessment is part of an application for an ECA or amendment and the assessment indicates that air concentrations may approach levels with potential for adverse effects, this may lead to further refinement of emissions or a possible mitigation plan submitted to support the issuance of the ECA.
- The ministry would use the most appropriate abatement and enforcement tools set out in the ministry’s Compliance Policy, as needed.

Next Steps

- Proposal to post draft updated guidance and technical bulletin for public consultation.
- Timing to be confirmed.