Significant Factors Considered During the Toxicological Evaluation of Air Permit Applications

Stanley Aniagu, MSc., Ph.D., RPh., DABT
Toxicology, Risk Assessment, &
Research Division, TCEQ

TCEQ Environmental Trade Fair and Conference
(San Antonio, TX), June 4, 2025

Outline of Presentation

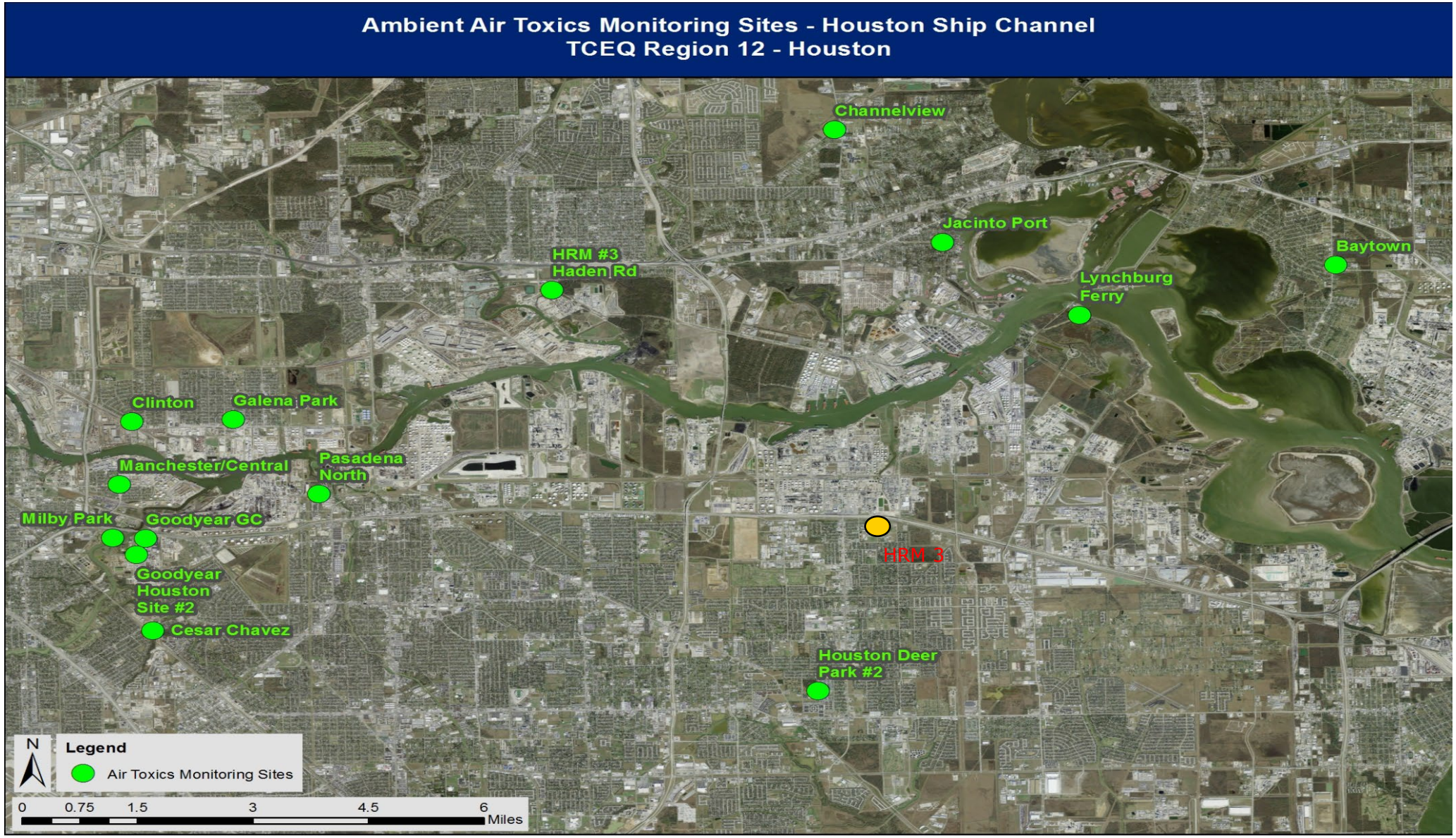
- Overview of TCEQ air monitoring and air permitting
- The Toxicology review process
- What are Effects Screening Levels (ESLs)?
- MERA Flowchart
- Effects evaluation procedure – Toxicology impacts
- Request for comments (RFCs) and turn-around times
- Target allowable exceedances
- Impacts review for odorous chemicals
- Summary and conclusion

Air Quality and Environmental Health

- Air quality is an important part of health as air pollution can result in reduced lung function, increased incidences of chronic respiratory disease as well as other health effects
- However, air quality is not the only determinant of respiratory function or disease
- Genetics and lifestyle also play a major role
- Subpopulations of people are more sensitive to air pollution (asthmatics, COPD, emphysema, allergies, young and old)

Air Monitoring and Air Permitting

- We do not have stationary air monitors at every facility, and we do not monitor for every chemical emitted; however,…
  - We permit the facilities with no off-site monitors in the same manner as those with off-site monitors
  - We monitor for representative chemicals emitted in high quantities
  - We conduct inspections and reconnaissance investigations
- Consistent permitting is key to maintaining air quality in the presence of industrial development and population growth



Texas Commission on Environmental Quality

Date Created: 1/10/2018

This map was generated by the Toxicology Division (TD) of the Texas Commission on Environmental Quality. This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries. For more information regarding this map, please contact the TD at (512) 239-3900.

Air Permitting is the Foundation

- Issuing and complying with good quality air permits is the key to our current and continued success
- We need specific information to give applicants maximum flexibility, ensure the air contaminant levels stay below levels of concern, and protect public health and the environment
- Good quality air permits allow the agency to defend our work, and we can also back up our work with data

Toxicology Review Process…

- Request for comments (RFC)
- Effects Screening Levels (ESLs): Guidelines – not Standards
- Effects evaluation procedure
- What kind of effects?
  - Health
  - Odor
  - Vegetative
  - Animal

What are Effects Screening Levels (ESLs)?

- ESLs are chemical-specific air concentrations set to protect human health and welfare.
- Short-term ESLs are based on data concerning acute health effects, the potential for odor nuisance, and effects on vegetation
- Long-term ESLs are based on data concerning chronic health and vegetation effects.
- Welfare-based ESLs (odor and vegetation) are set based on effect threshold concentrations.
- Health-based ESLs are based on the most sensitive adverse health effect relevant to humans with an ample margin of safety.

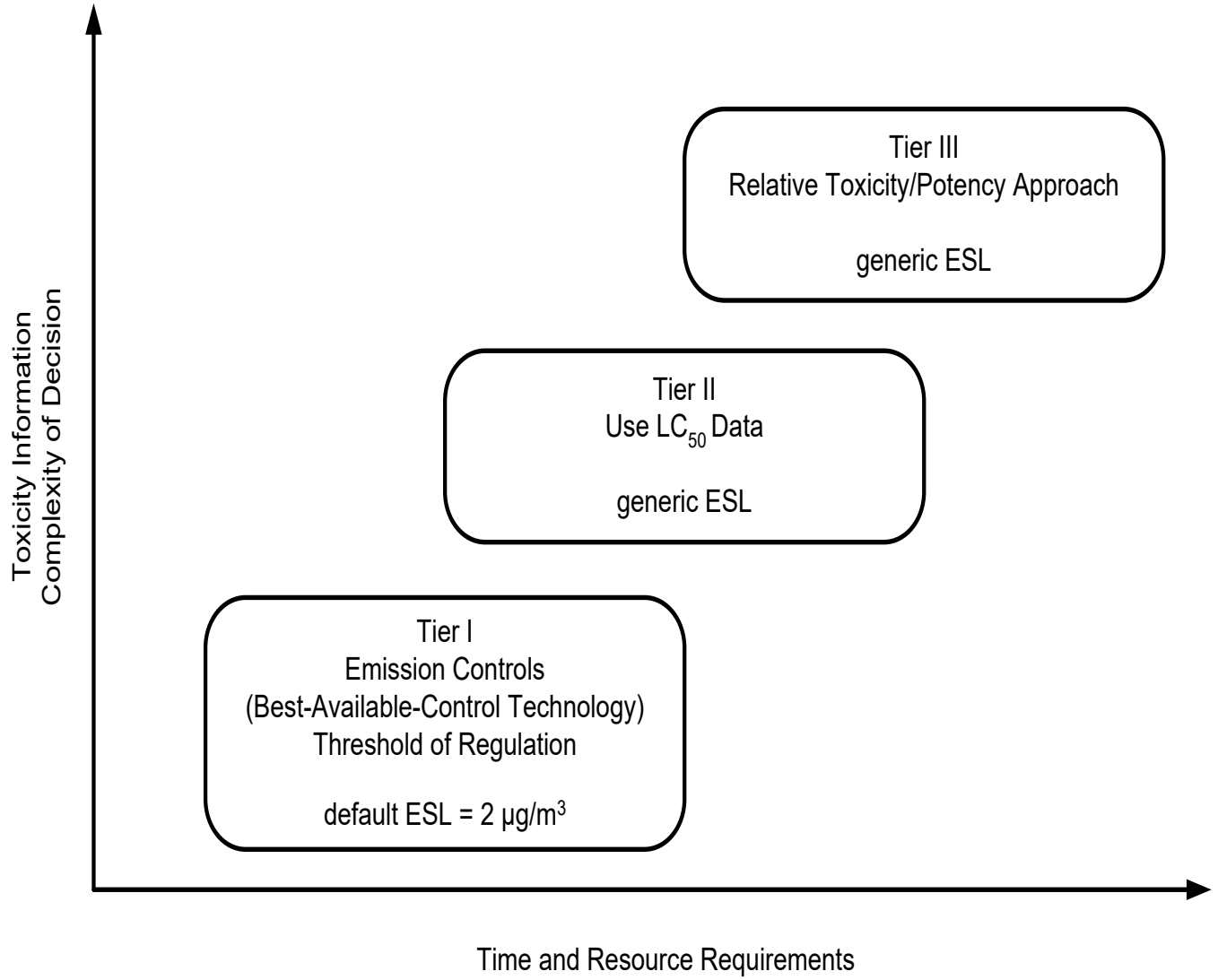
Effects Screening Levels…..

- ESLs are primarily used to evaluate proposed emissions in air permits that are submitted to the TCEQ
- The Toxicology, Risk Assessment, and Research Division (TD) evaluates proposed emissions to determine whether such emissions would cause chemical concentrations in the air that are of concern to human health or welfare
- In the process of evaluating modeled concentrations from proposed emissions, the TD often must evaluate the potential toxicity of chemicals that are proposed to be emitted.
- The TCEQ provides screening values such as ESLs for non-criteria chemicals that are proposed to be emitted by regulated entities.

Types of Effects Screening Levels

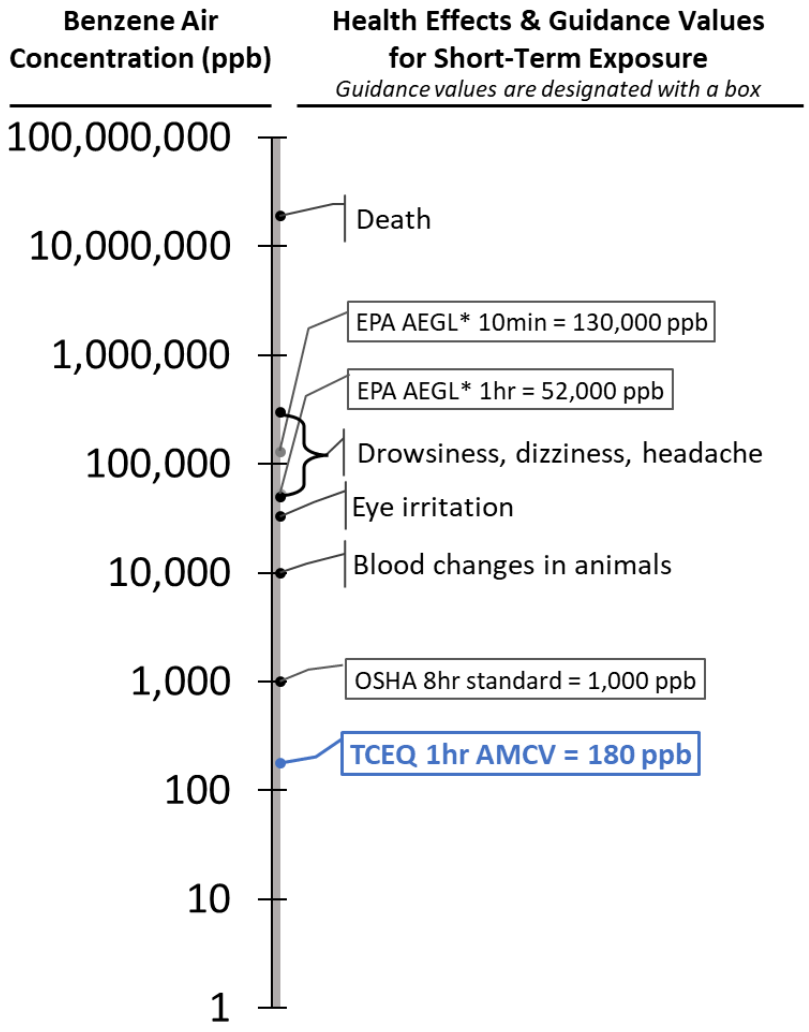
- Interim ESL is a health-based ESL for chemicals that have not been evaluated under the TCEQ Guidelines.

- A Final ESL is a health-based ESL for chemicals developed under the 2015 TCEQ Guidelines to develop Toxicity Factors (https://www.tceq.texas.gov/downloads/toxicology/publications/rg-442.pdf).
- For this, the Development Support Document (DSD) has undergone a public comment period and is considered final.

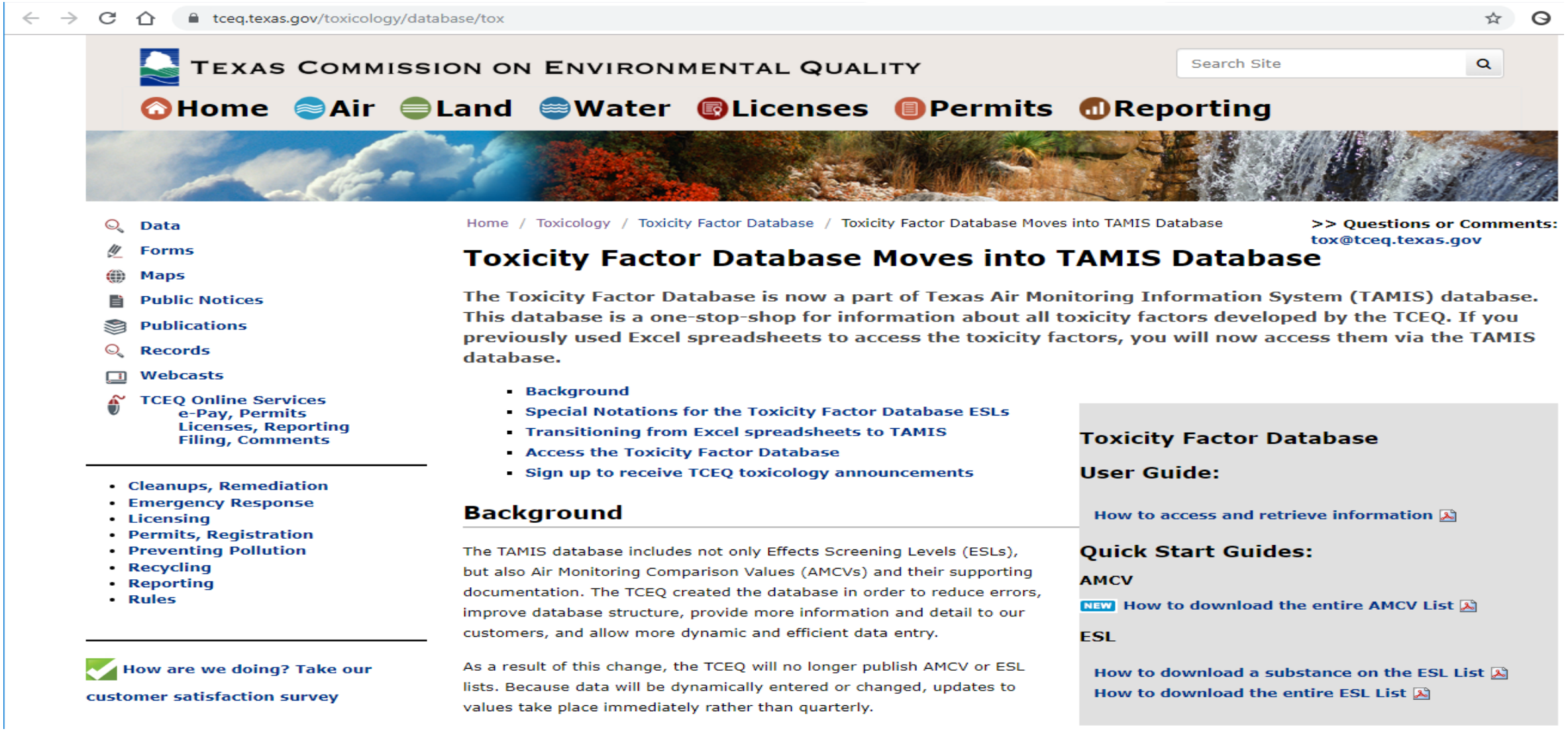

Toxicity Information
Complexity of Decision
Tier III
Relative Toxicity/Potency Approach
generic ESL
Tier II
Use LC_{50} Data
generic ESL
Tier I
Emission Controls
(Best-Available-Control Technology)
Threshold of Regulation
default ESL = 2 µg/m^3
Time and Resource Requirements

TCEQ Health-Protective Comparison Values

- All comparison values derived and used by TCEQ are **safe levels**
- A health effect would not necessarily be expected if a safe level is exceeded because they are set well below levels that have been shown to cause harmful health effects
- Example: Benzene
  - TCEQ 1 hr AMCV = 180 ppb
  - Eye irritation has been observed in humans at 33,000 ppb
  - EPA 1 hr AEGL 1 = 52,000 ppb
    - *Acute Exposure Guideline Levels – AEGLs represent the level at which health effects may occur*
      - *Level 1 AEGLs are the least severe, they represent effects such as notable discomfort, irritation, or certain asymptomatic non-sensory effects – these effects are not disabling and are transient and reversible once exposure ends.*
    - AEGL 1 levels for benzene are based on mild nervous system effects in humans (drowsiness, dizziness, headache)



ESL Database



MERA Flowchart

- Modeling and Effects Review Applicability (APDG 5874)
  - Modeling and Effects Review Applicability
- Updated March 2018
- Applicants are no longer always required to request ESL if chemical of interest is not in ESL Database (searched by CAS# or chemical names)
  - Toxicity factor database webpage
- Exempt if:

> • Chemical species for which there is not a current ESL listed in the Toxicity Factor Database, accessed through the Texas Air Monitoring Information System (TAMIS) database via the Toxicology ESL summary and detail reports. While no effects review is required, such chemical species must satisfy the BACT and other requirements. In addition, the permit reviewer and APD management have the discretion to perform an effects review outside of the MERA process. This exemption does not apply to chemical species being authorized under chemical flexibility permit provisions.

Air Permits - Effects Evaluation Procedure

- A three-tiered approach is used to evaluate the potential health and welfare effects of emissions on a constituent-by-constituent basis:
  - Tier I: GLC_{max} and GLC_{ni} below the ESLs
  - Tier II: $GLC_{max} \leq$ 2x ESL and $GLC_{ni} <$ ESL
  - Tier III: Case-specific factors

- GLC_{max} = Maximum ground level concentration;
- GLC_{ni} = Maximum ground level concentration at a non-industrial receptor

- ***Acceptable*** - adverse health or welfare effects would not be expected as a result of exposure to a given constituent concentration.
- ***Allowable*** - the permit engineer has provided justification to the Toxicology Division that the predicted GLCs are not likely to occur or that they occur in a location where public access is limited.

Tier I: Is the off-property GLC_{max} below the ESL?

- **If "Yes" → the impacts are acceptable.**
- **If "No" → Tier II.**

Tier II: Are both of the following conditions met?

1. $GLC_{max} \leq 2 \times ESL$

   where:

   the GLC_{max} occurs on industrial use property

2. The $GLC_{ni} < ESL$

   where:

   the GLC_{ni} is the ground-level concentration at the maximally affected, off-property, nonindustrial receptor.

- **If "Yes" → the impacts are acceptable.**
- **If "No" → Tier III**

Tier III: The Toxicology Division will conduct a case-by-case review of the health and welfare effects of the chemical species to determine if the impacts are acceptable, unacceptable, or allowable. The Toxicology Division may consider the following factors

Effects Evaluation Procedure under MERA

Tier III Evaluations

* **Examples of factors to be considered** *

- Surrounding land use
- Potential for public exposure
- Conservatism of the approach use to determine the $GLCs_{max}$ and $GLCs_{ni}$
- Existing concentrations of the chemical species
- Basis of ESL (odor vs. health, degree of confidence, margin of safety)
- Acceptable reductions in existing GLCs

- This information is analyzed by the toxicologist to develop a final determination on the likelihood that emissions will increase the risk of adverse health or welfare effect

Tier III Case-by-Case Review

- **Location of maximum Impacts**
  - How likely is public exposure at locations where GLC_{max}/GLC_{ni} occur?
  - Transient receptors
    - Right-of-way, stop sign
    - Road, highway, railroad
- **Decrease in existing levels of the same constituent?**
- **Type of toxic effect caused by the constituent**
- **Margin of safety**
- **Degree of confidence in the toxicity database**
- **Emission Controls**
- **Regional Office Comments**
- **Acceptable reductions from existing GLCs**
  - Increase/decrease of emissions, actual vs. paper?
  - Room for further emission reductions

Important note on ESLs and GLCs

- Applicants need to model for their predicted ground level concentrations (GLCs), and establish the maximum GLCs
- If the maximum predicted GLCs of a constituent do not exceed the ESLs, adverse health or welfare effects will not be expected.
- If the maximum predicted GLCs of constituents exceed the ESLs, it does not necessarily indicate a problem, but rather this triggers a more in-depth review by the TD

The Toxicology RFC and Review Times

- Tier III evaluation - APD permit reviewers use information from the permit application and modeling report to fill out and send a "Request for Comments" (RFC) form to the Toxicology Division, indicating whether it is a:
  - Expedited or rush application: Turn-around time ranges from 2-5 business days
  - Routine application: two-week turnaround time; usually within a week, can be within 24 – 48 hours if have all the information needed to complete the Tox review

Basic Information for a Project

Request for Comments – TCEQ Toxicology Division

Date Submitted	**January 6, 2014**	**RUSH?**	**No**
Toxicology Control No.	7133/Jones		
Company Name	[redacted]		
Physical Location	[redacted]		
City	Texas City		
Facility Type	produce phthalate esters for use as vinyl plasticizers		
Location of ARC Reader Files	\\\tceq4apmgisdata\GISWRK\APD\MODELPROJECTS\4169\4169.pmf		
County	Galveston		
Customer No. (CN)	[redacted]	**Permit No.**	[redacted]
Regulated Entity No. (RN)	[redacted]	**Project Number**	190845
Account No.	[redacted]	**Permit Review Type**	Permit Amendment Application
% New Hourly and Annual emissions	0	**Permit Reviewer**	Jesse Lovegren, PhD
Air Pollutant Watch List Area	1202	**Watch List Pollutants Involved**	None

- Time restriction? Rush?
- Details regarding physical location
- APWL – Air Pollutant Watch List?
  - If so, is there a net increase in emissions for watch list chemical?

Basic Information for a Project……

- What is the company doing?
- Is it an existing facility?
  - If this is a new permit for an existing facility, what's it for?
  - Will the project result in actual emission increase/decrease?
- Does the facility operate only during certain hours of the day or limited hours within the week/weekend?
- Does the modeling exercise include MSS?

Basic Information for a Project …

Emission Calculation Approach – Describe the emission calculation approach used (emission factors, material balance etc.) and the level(s) of conservatism in the approach.

Storage tank and loading emissions were calculated using AP-42 equations. Fugitive emissions are calculated using emission factors. MSS (maintenance, startup, and shutdown) emissions are estimated via engineering judgment.

Emission Controls – Describe the process and/or add-on emission controls used to limit emission rates. Include the sources controlled and capture and control efficiency for add-on emission controls.

Filling of storage tanks and loading of containers, tanker trucks and rail cars is via submerged or bottom fill. No add-on controls are employed as the products have vapor pressures less than 0.5 psia (absolute pressure) at loading conditions. Fugitives are monitored under the 28VHP leak detection and repair program. MSS emissions are limited as to the number of tanks which may be simultaneously degassed.

Basic Information for a Project II…

- Emissions calculations/Emissions control: provide context about the operations
- Are the modeling approaches conservative? If so, how?
- Are there better controls or systems being put in place on an existing facility?

Modeling approach

Type of Model Used in the Impacts Analysis –

AERMOD

Sources Included in the Impacts Analysis – Indicate if this is site wide modeling. If not, indicate which sources emitting the constituent under review were not included.

Sitewide modeling; all sources of 2EH and TEP are included.

Modeling Approach – Discuss the modeling approach used and include the characterization of the sources (point, pseudo point, area, volume, flare etc.) and how this affects the level of conservatism of the model. Indicate if refined runs at actual emission rates were used or if ratioing and summation techniques were used.

Modeling is based on refined runs at actual emission rates. Vents on loaded vessels are modeled as point sources. Tank vents are modeled as pseudo-point sources. Fugitive and MSS emissions are modeled as volume sources.

Facility Operating Limitations – Limitations to be included in the permit that affect impacts - throughput, hours of operation etc.

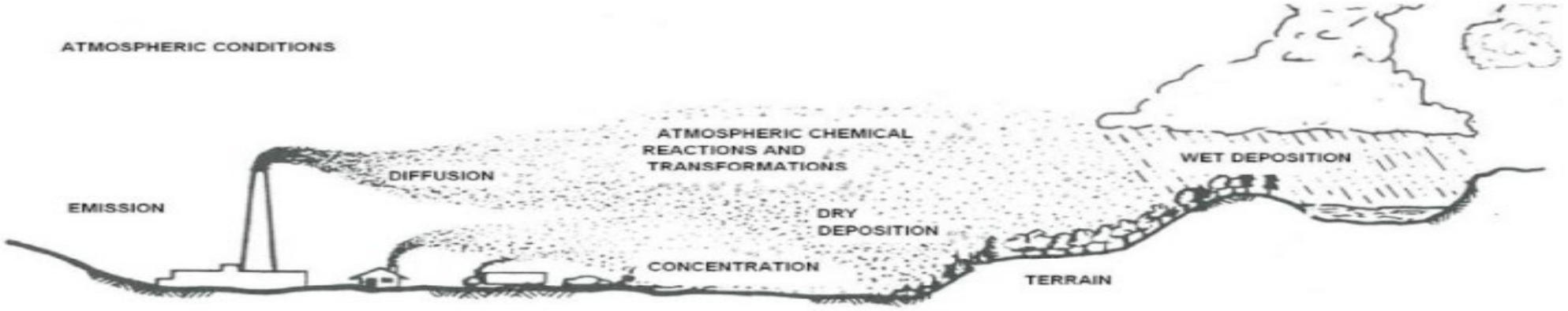
Pumping rates are restricted to 500 gpm (gallons per minute) for land-based loading operations and 2500 gpm for marine loading. Two product tanks storing 2EH may not be filled simultaneously.

Modeling approach I….

- What are the conservative modeling assumptions for the project?
- How realistic is the modeling (i.e., 24/7 when company actually operates for only 40 - 60 hours/week)?
- Are there restrictions on actual operations? Does model show all devices running at maximal emissions when that condition is not achievable?
- How many hours per year were MSS modeled vs how often they actually occur?

Conservatism in modeling

- Air dispersion modeling is not accurate. It is an estimate.
- Modeling emission impacts from industrial facilities is intended to be conservative.
- Often worst-case conditions are what we review.
- Important to communicate why model is conservative.



Examples: Conservatism in modeling

- Model represents 8760 hours of operation, but actual hours of operation are significantly less
- Model assumes highest possible emission rates from point sources
- Point sources are assumed to be operating simultaneously (an action that cannot occur in reality)
- Worst-case meteorological data results in highest impacts occurring in the middle of the night (a time when the facility is not operational)
- Looking at the concentration grids, do the highest concentrations rapidly decrease while moving away from emissions sources?

Surrounding land use

Surrounding Land Use – Describe the surrounding land use and any zoning restrictions and provide an area map.

Industrial land to South, industrial waters to East, and residential area to the North

- Where is the facility?
- What is near it, particularly if receptors are sensitive?
- What do we know about zoning?
- Do receptors fall on open land? Could the land be developed?
- Is there a history of complaints (esp. if company is predicting ESL exceedances)?
- If there were complaints, what became of the investigation (e.g., NOV)?

Location of Maximum Impacts

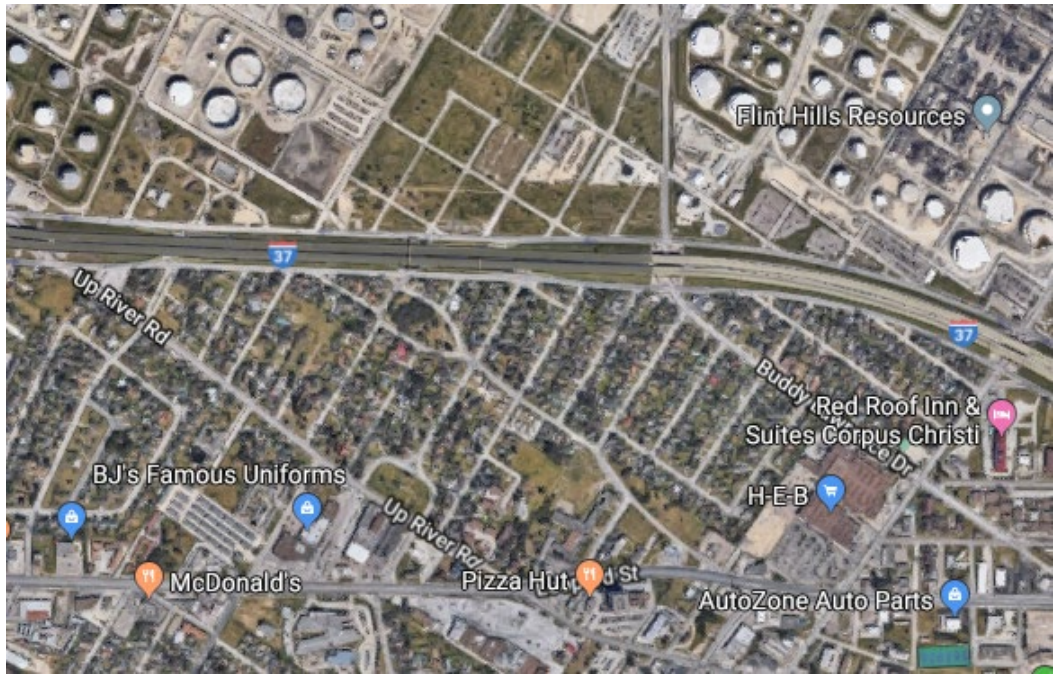
Location of Maximum Impacts -

Receptors	Distance from Property line (ft)	Receptor Type
GLC_{MAX}	South property line	Industrial land
GLC_{ni}	North property line	Residential area.
Other - Specify	East property line	Industrial water

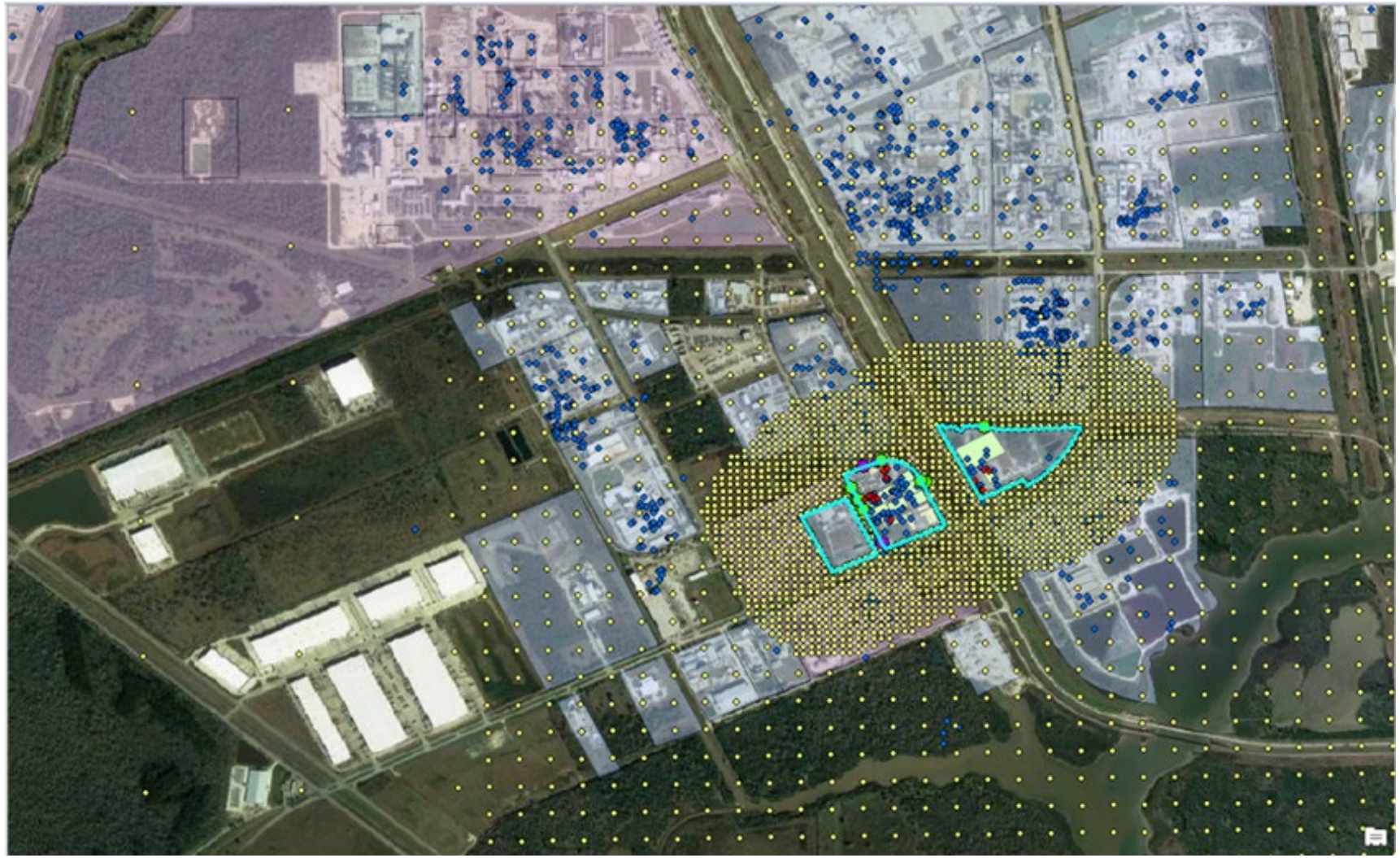
- Direction and distance from property line
- If GLC_{max} is on vacant land, could it become a site of public exposure?
- If GLC_{max} occurs on a transient receptor, then also provide non-transient receptor GLC_{max}
- If over water, is it an industrial or recreational waterway?
- Is there restricted access?

Location of Maximum Impacts…II

- Important to provide more details
- Maps and concentration grids help
- Do your research ahead of time to prevent delays



Air Modeling Results: Concentration Grid

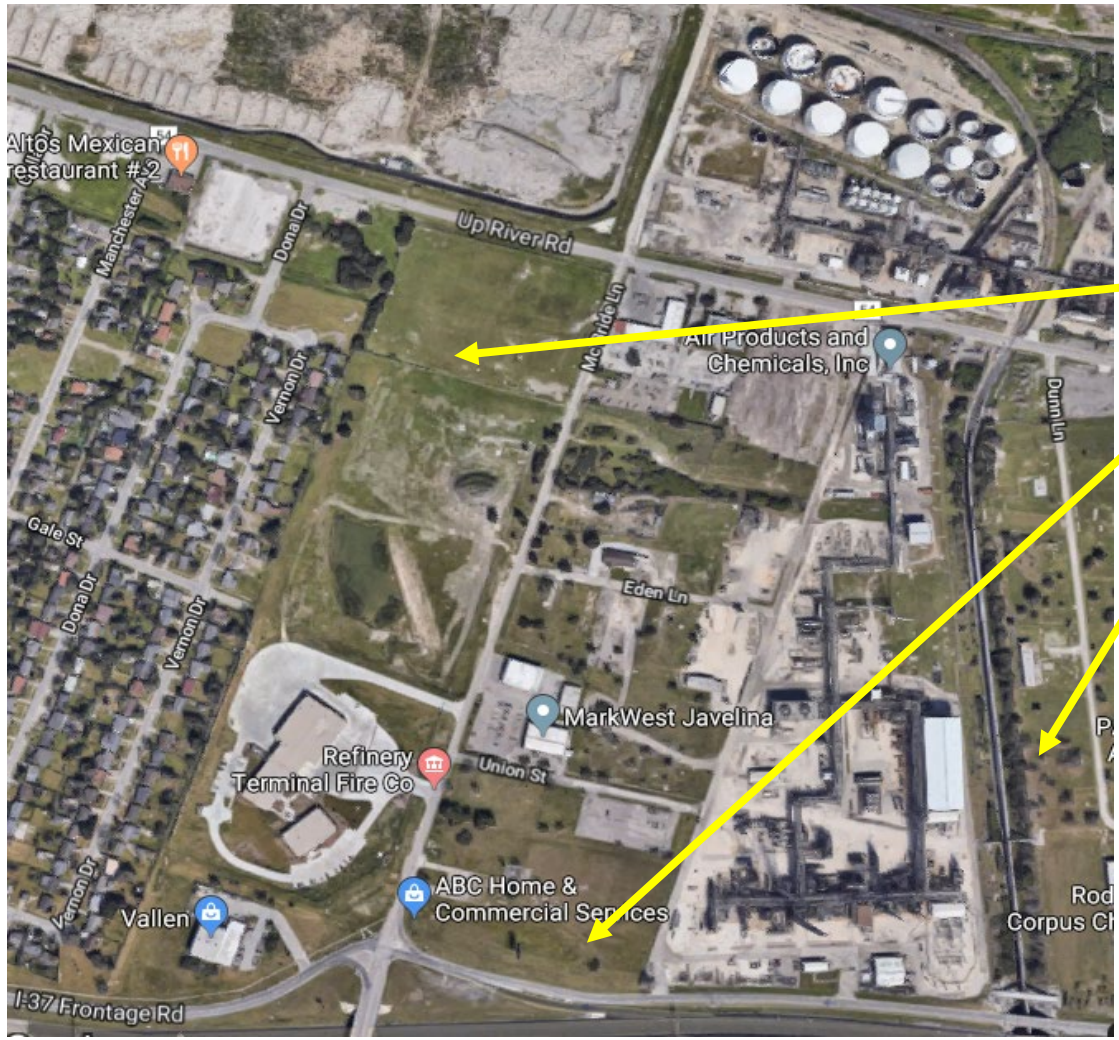


- Each dot is a receptor location where a concentration is modeled → compared to air permitting-specific toxicity factors (effects screening levels - ESLs)

Location of Maximum Impacts…..III

- <u>Open land:</u> may be considered industrial or non-industrial
  - Is it possible the land could be developed for non-industrial purposes?
- Pay attention to zoning
- Non-industrial receptors
- Transient vs. non-transient

Location of Maximum Impacts…IV



Open Land

- Who owns the land?
- Is it zoned?
- Could it be developed?

Who can help?

- Regional Office
- City
- County

Transient versus Non-Transient Receptors

- Transient receptors should not be used as locations for chemical-specific maximum ground level concentrations.
- Locations of transient exposure include:
  - Roadways
  - Railways
  - Airport runways
  - Right-of-ways
- Transient receptors: Considered less conservative because they are areas where exposure to impacts would occur for a short period of time.
- Non-transient receptors are in areas where sustained exposure would occur.

Transient versus Non-Transient Receptors..

Transient

- Right-of-way
- Roadway
- Stop Sign
- Roundabout
- Railway

Non-Transient

- Home
- Motel
- Commercial business
- Church
- School

Facility Operating Limitations/Restrictions

Facility Operating Limitations and Scenarios: Example

- The model was run without operational restriction, such as those based on hour of the day or month of year.

- The combined routine and MSS emissions were conservatively modeled for 8,760 hours per year.

- Emission point numbers (EPNs) were modeled as operating simultaneously for the entire year (i.e., MSS and routine together).

Complaints/Compliance History

Example statement:

- A compliance history report was prepared on February 28, 2025, with the history period from January 1, 2003, to March 15, 2025.

- No Notice of Violations/Notice of Enforcement have ever been issued at this site.

Mitigation of Impacts

Additional Comments – Include modifications made to improve off property impacts if necessary.

Short-term impacts over industrial water are 1760 $\mu g/m^3$ and 329 $\mu g/m^3$ for 2EH and TEP, respectively. $4^*\lambda_{max} = 2$ for 2EH. $2^*\lambda_{ni} = 1$ for both 2EH and TEP. Tier III analysis provided by applicant is attached.

- Are there any permit conditions to reduce impacts?
- How would this affect the interpretation of the modeling results?

Impacts Summary

IMPACTS SUMMARY

		Short Term Impacts Analysis					Annual Impacts Analysis		
CAS NO.	Constituent	ESL	GLC_{MAX}	$2*\lambda_{MAX}$	GLC_{ni}	λ_{ni}	ESL	GLC_{MAX}	GLC_{ni}
104-76-7	2-Ethylheptanol	400	2194	7	915	20	160	40	< 40
78-40-0	Triethyl phosphate	500	1016	1	1016	8	50	17	< 17

- If the ESL is not available, contact the Toxicology Division for assistance. Include a CAS No. on the form even if an ESL is not available as of the date of the request for comments.
- The term *nonindustrial* or the letters ***ni*** are used to identify any receptor on nonindustrial property or land not zoned as industrial. A receptor on the property line is considered to be the same type of receptor as the nearest receptor off property. For example, if the land adjacent to an industrial property line is unzoned, then a receptor on the property line would be identified as nonindustrial.
- **ESL** - effects screening level in $\mu g/m^3$.
- GLC_{MAX} - Maximum off-property ground-level concentration in $\mu g/m^3$.
- $2*\lambda_{MAX}$ - (same value as $2xGLC_{MAX}$ as stated by Air Dispersion Modeling Team) number of hours per year that the GLC_{MAX} exceeds two times the ESL at an industrial receptor, other $1*\lambda_{MAX}$ should apply if GLC_{MAX} is at a non-industrial receptor.
- GLC_{ni} - ground-level concentration in $\mu g/m^3$ at maximally affected nonindustrial receptor. Supply this information only if the GLCmax is greater than the ESL and is at an industrial receptor.
- λ_{ni} - (same value as $1xGLC_{ni}$ as stated by Air Dispersion Modeling Team) number of times the ESL is exceeded (hours/year) at GLC_{ni}.
- New emissions refers to the fraction of emissions in the modeling that are not currently (prior to the modification) emitted from the site. A new site (greenfield) would have 100 percent while a unit with no modifications would have zero percent.

IMPACTS SUMMARY - REFINED

Table 1. Total GLCmax and GLCni Exceedances

CAS No.	67-66-3
Constituent	Chloroform
Routine or MSS?	Routine and MSS
Short Term Impacts	
ESL	100 ug/m3
GLCMAX	499
1*λMAX	---
2*λMAX	8
4*λMAX	2
10*λMAX	---
GLCni	196
Λni	1
Annual Impacts*	
ESL	N/A
GLCMAX	N/A
GLCni	N/A

*Modeled GLCmax for annual averaging time chloroform is less than 10% of the ESL – chloroform annual GLCmax is 0.7 µg/m3 and 10% ESL is 1 µg/m3. Annual chloroform impacts fell out at MERA Step 3.

Impacts Summary Table

Impacts Summary Table….

- Give CAS number and check accuracy
- Use most up-to-date ESL list on the TCEQ database (i.e., TAMIS website)
- If you are unsure about an ESL, contact the TD
- Please fill out the impacts table clearly
- If GLC ≥ 4x ESL, then add $4\lambda_{MAX;}$ Same for $10\lambda_{MAX}$ if applicable
- If unique circumstances exist, please explain.

Common issues that could slow down the Tox review process

- Poor characterization of location of highest impacts
- Use of places of transient exposure for the GLC receptors
- Failure to separate MSS from Routine emissions
- Description of conservative assumptions used for modeling:
  - Hours of operation (8760 vs actual hours)
  - Emission rates
  - Simultaneous activities
  - Time of day when worst impacts happen
- Special conditions

Potential for public exposure

- How likely is it that members of the public will be exposed at the locations of maximum impacts?
- Examples of such areas of maximum impact include:
  - Schools, Day Care centers
  - Public Parks, hospitals
  - Recreational areas
  - Public event locations
  - Commercial areas e.g., shopping malls, rest stops

Routine versus MSS emissions

- MSS = Maintenance Shutdown and Startup
- It is important to model routine and MSS emissions separately (i.e., routine, MSS, then routine + MSS)
- MSS emissions often have higher modeled concentrations but much lower frequencies
- We need information that will help us understand the nature of emissions (e.g., tank is only emptied once every five years).

Permit Special Conditions

- When modeling data indicate possible issues will arise if elements of operation are not controlled, special conditions may be applied to the permit.
- Examples:
  - If an odor issue arises, the company must immediately address it.
  - Hours of operation of a certain point source are limited to number of hours per year.

Cases where flexibility is limited

- In general, less flexibility for:
  - Pungent odorous constituents (styrene, aldehydes, reduced sulfurs)
  - Strong eye/nose/throat irritants (acrolein, formaldehyde)
  - Sensitizing chemicals (Isocyanates)
  - Highly toxic or carcinogenic constituents (e.g., benzene, Cr VI)
  - Constituents with high ambient monitoring levels (APWL)
  - Constituents excluded from using the MERA Flowchart (i.e., Appendix B of MERA)
- It depends on the circumstances

Constituents excluded from using the MERA process

Appendix B: Toxicology Emissions Screening List

Emissions from the following facilities have been reviewed for health effects and are not expected to cause adverse health effects. These do not require additional review through the MERA process.

- Odor and particulate emissions from agricultural, food processing, or animal feeding or handling facilities.
- Emissions of particulates from abrasive blast cleaning provided they do not contain any of the following:
  - asbestos;
  - metals and metal compounds with an ESL of less than 50 µg/m3 that are in a concentration of greater than 2.0%; or
  - crystalline silica at greater than or equal to 1 percent (weight) of the total particulate weight.
- Emissions of particulate matter, except for metals, metal compounds, silica, from controlled surface coating operations. Controlled surface coating operations are those that capture and abate particulate matter with a water wash or dry filter system (at least 98% removal efficiency) and vent through an elevated stack with no obstruction to vertical flow.
- Emissions of particulate matter from rock crushers, concrete batch plants and soil stabilization plants.

Constituents excluded from using the MERA process..

- Emissions from boilers, engines, or other combustion units fueled only by pipeline-quality natural gas as well as emissions from the combustion of natural gas in control devices.
- Emissions from flares, heaters, thermal oxidizers, and other combustion devices burning gases only from onshore crude oil and natural gas processing plants, with the exception of emissions from glycol dehydrators and amine units.
- Emissions of volatile organic compounds from emergency diesel engines.
- Emissions of freons that have ESLs greater than 15,000 µg/m3 from any facility.
- Emissions of the following gases, which have been classified as simple asphyxiates, from any facility.
  - argon
  - carbon dioxide
  - ethane
  - helium
  - hydrogen
  - methane
  - neon
  - nitrogen
  - propane
  - propylene

Impacts Review for odorous chemicals

- Pleasant Odor Chemicals Impacts Review
  - Butyl acetate, MAK (Methyl N-Amyl Ketone), MEK (butanone), Toluene
- Styrene Impacts Review
  - GLCmax ≤ 2x and GLCni ≤ 1x Odor-ESL
  - Concentrations > 1x ESL must be ≤ 24 hr
  - Tier 3.5 (Memo)
- Facility Complaints/Compliance history
- Special conditions for odor remediation

Target Allowable Magnitude and Frequency of Health-based ESL Exceedances

- Over industrial land
  - GLC_{max} ≤ 10x ESL
  - Concentrations > 2x ESL must be ≤ 24 hr and
  - Concentrations > 4x ESL must be ≤ 10 hr
- Over non-industrial land
  - GLC_{ni} ≤ 2x ESL
  - Concentrations > 1x ESL must be ≤ 24 hr
- Over industrial water
  - GLC_{max} ≤ 25x ESL
  - Concentrations > 10x ESL must be ≤ 24 hr and
  - Concentrations > 20x ESL must be ≤ 10 hr
- Over Recreational Water
  - GLC_{ni} ≤ 5x ESL
  - Concentrations > 2x ESL must be ≤ 24 hr and
  - Concentrations > 4x ESL must be ≤ 10 hr

Target Allowable Magnitude/Frequency of Odor- or Vegetation-based ESL Exceedances

- Over industrial land
  - $GLC_{max} \leq$ 4x ESL
  - Concentrations > 2x ESL must be ≤ 24 hr and
  - Concentrations > 4x ESL must be ≤ 10 hr
- Over non-industrial land
  - $GLC_{ni} \leq$ 2x ESL
  - Concentrations > 1x ESL must be ≤ 24 hr
- Over industrial water
  - $GLC_{max} \leq$ 4x ESL
  - Concentrations > 2x ESL must be ≤ 24 hr
- Over Recreational Water
  - $GLC_{ni} \leq$ 2x ESL
  - Concentrations > 1x ESL must be ≤ 24 hr

How do we deal with ESL Exceedances?

- It always depends on the situation and specific factors involved in the project
- Primarily on a ‘case-by-case’ and ‘constituent-by-constituent’ basis
- No fixed magnitude/frequency criteria from the TD
- Annual impacts must be reviewed, if LT-ESL is < 10% of ST-ESL. If not done, reasons must be given
- Reviews for chemicals of concern in APWL areas

RFC Review in an Air Pollutant Watch List (APWL)

- APWL Coordinator/Region/APD/Toxicology involved
- Permit Application Guidance for Companies Located in an APWL Area (available online)
- Equivalent Reductions in GLCs

- Proposed Controls
- Preliminary Air Quality Analysis for the APWL contaminants
- Special condition(s)

- Toxicology does not support any net increases in APWL areas

Summary – Possible outcomes

Acceptable- Tier I & II

. Adverse health or welfare effects would not be expected as a result of exposure to a given constituent concentration

Allowable- Tier III

Meets Tier III

. There may be a potential for adverse effects to occur as a result of exposure to a given constituent concentrations

- Unacceptable:
  Does not meet Tier III case-by-case review

Summary - Conclusion

- RFCs are needed for impacts that do not meet Tiers I or II criteria
- For Tier II, the Toxicology Division is still happy to help to make sure that the impacts and locations of receptors would not be of concern to human health/welfare and the environment
- It’s good practice to check with Toxicology if impacts do not meet target allowable magnitudes/frequencies before any further steps
- Always refresh your mind of MERA stipulations for ESL exceedances in relation to health effects and impacts reviews
- Also see “Tips for Completing the RFC form”

Contact Information

1. Dr. Stanley Aniagu

Phone: 512-239-0558

Email: Stanley. Aniagu@tceq.Texas.gov

2. Dr. Nnamdi Nnoli

Phone:512-239-1785

Email: Nnamdi.nnoli@tceq.Texas.gov

Your Turn

Any Questions or Comments?