

Effect of Location Coordinates on RTR Risk Results Anne Pope, Colin Boswell, Ketan Patel, Dr. Michael Stewart, and Brian Stitt, U.S. EPA, and Stacie Enoch, ERG

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RTR combines Residual Risk, section 112 (f)(2), and Technology Review, section 112 (d)(6), required by the Clean Air Act.

Residual Risk: Conduct risk assessment for MACT source categories to determine if additional standards are necessary to reduce residual risk

Technology Review: Review and revise MACT standards as necessary taking into account developments in practices, processes, and control technologies

PHASE I EPA collects data

EPA proposes rule:

- Prepare risk modeling file - Conduct risk assessment using HEMAERMOD - Conduct technology review

PHASE III

EPA promulgates rule: - Incorporate docket comments

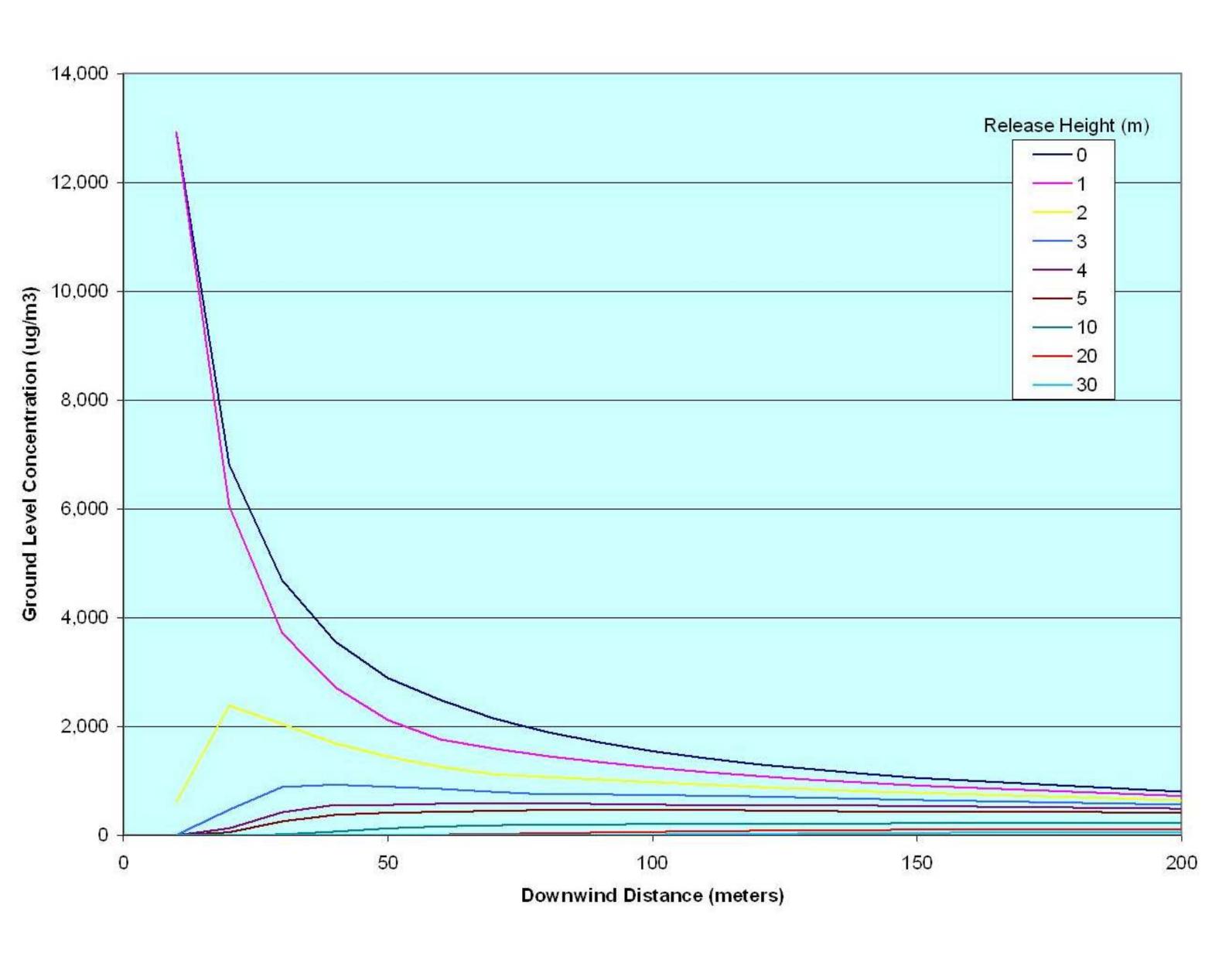
- Revise risk modeling file
- Revise risk assessment
- Revise technology review

Geographic **Modeling Data Fields Greatly** Impact RTR **Risk Results!**

Latitudes and Longitudes of Individual Stack and Fugitive **Emission Release Points**

Fugitive Release length, width, and angle

Fenceline Maps



The greatest change in ambient concentration occurs within the first few meters downwind from a source.

LATITUDES AND LONGITUDES



Individual release point coordinates improve risk results greatly!

- Stack releases are modeled as single points
- Fugitive releases are modeled either as single points or as rectangles
- Coordinates are reported in decimal degrees to the 5th decimal place

RTR A EIS

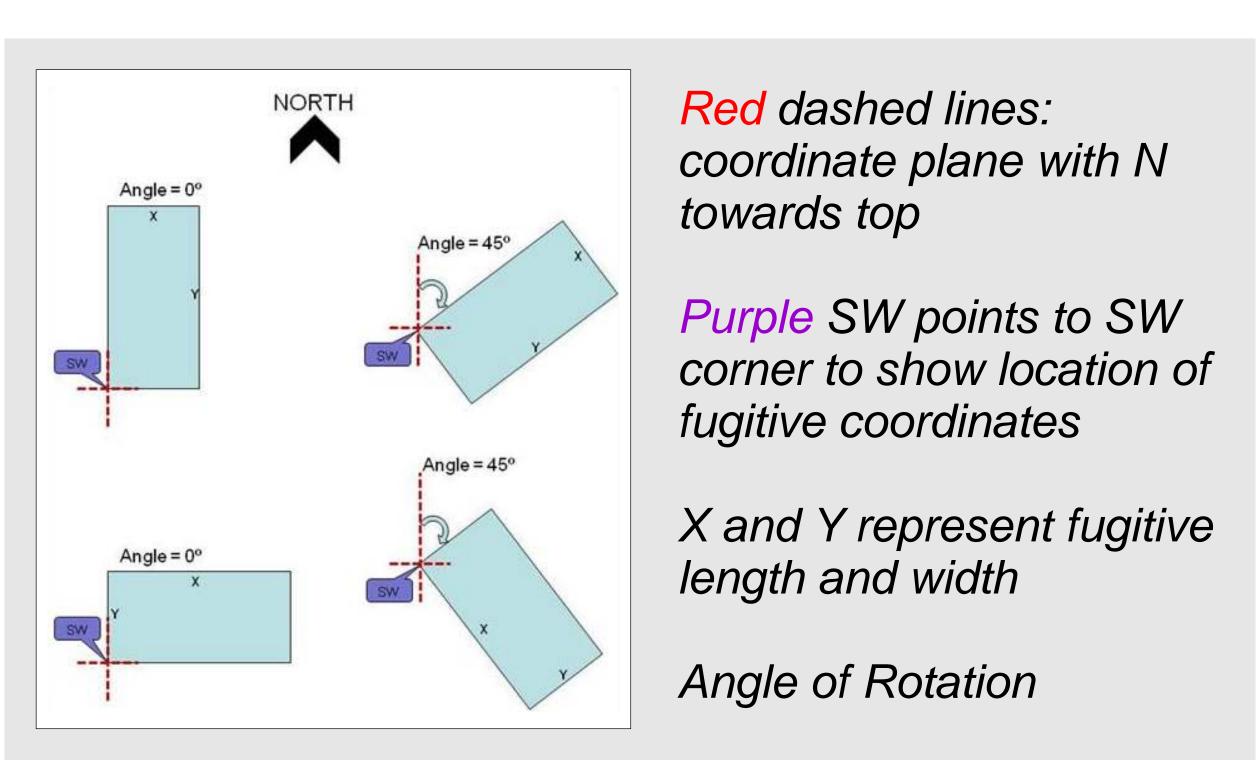


Risks declined from 100 in 1 million to 5 in 1 million with revision of coordinates.

RTR Procedures to QA and Revise Coordinates

- Convert coordinates to decimal degrees, if not reported in decimal degrees
- Add negative sign for longitudes, if missing
- QA Coordinates
- Identify records with site coordinates Plot all coordinates with ArcGIS, Google Earth, or Bing
- Identify coordinates that need revision
- Hierarchy to Revise Coordinates
- 1. Use site specific data from facility
- 2. Use combination of maps, EPA database, company websites
- Document source of coordinate revisions
- Populate Location Default data field in RTR modeling file

FUGITIVE PARAMETERS



Fugitive parameters impact

- Fugitive points: length, width, angle not populated
- Fugitive area releases length and width > 0 ft angle: 0 – 180 degrees

Revised Parameters and Coordinates

Primary Aluminum Facility: Risks

declined from 40 in 1 million to

20 in 1 million with revision of

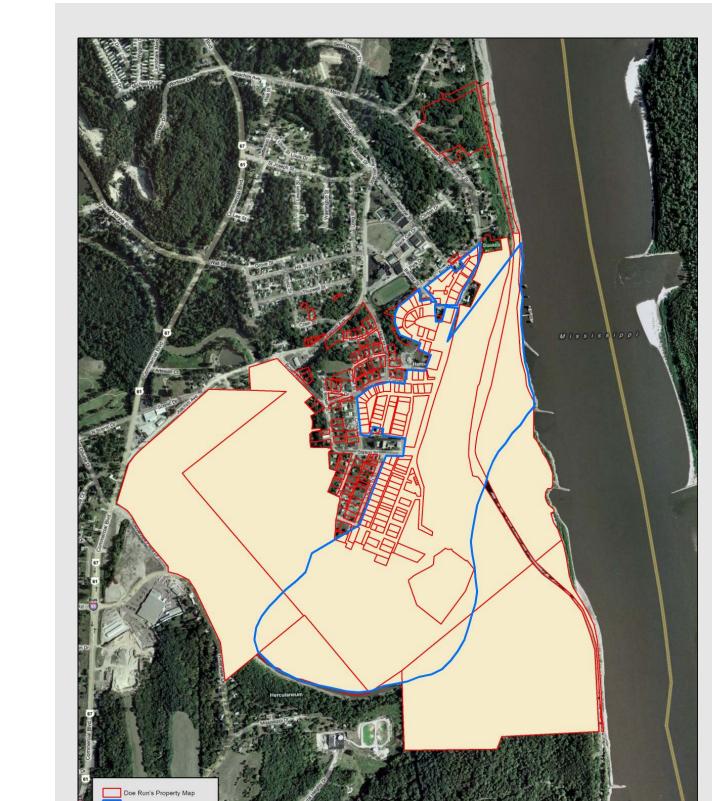
fugitive parameters

and coordinates.

RTR Procedures to QA and Revise Fugitive Parameters

- QA and Revise Emission Release Point Type
- Fugitive Point Releases: Delete values for length, width, and angle if present
- Fugitive Area Releases QA Identify records with length or width of 0 ft and angles > 180 degrees Plot all coordinates and parameters using ArcGIS, Google Earth, or Bing Identify coordinates and parameters that need revision
- Fugitive Area Releases Hierarchy to Revise Fugitive Parameters
- 1. Use site specific data from facility
- 2. Use maps
- 3. Use median values of existing non-0 values in modeling file
- 4. Use national NATA default of 32.8 ft for length and width and 0 for angle
- Document source of fugitive parameter revisions

FENCELINE MAPS



Blue outline provided by MO DNR modeled in proposal

Red outline provided in docket comments by facility

Tan area modeled for promulgation

Primary Lead Facility: Risks declined 98% from proposal to promulgation primarily based on revised fenceline map.

Fenceline Maps help improve risk results.

- Only contiguous areas are modeled in RTR
- Provide maps in KMZ format to modelers

RTR Procedures to QA and Revise Fenceline Maps

Fenceline Map QA

- Review maps using ArcGIS, Google Earth, or Bing

Hierarchy to Revise Fenceline Maps

- 1. Use site specific data from facility
- 2. Use site maps from EPA ROs, state, local and tribal agencies
- 3. Use ArcGIS, Google Earth or Bing to redraw maps

Document source of fenceline map revisions

The QA of individual emission release point coordinates, fugitive release parameters, and fenceline maps is an essential step in preparation of RTR risk modeling files.

Original Parameters and Coordinates

Green Xs represent model receptors

eleases (pot lines).

(census block centroids)

Red Xs represent Release point coordinates

Red rectangles represent the areas of fugitive

The authors encourage data providers to use GIS tools to QA individual emission release point coordinates, fugitive release parameters, and fenceline maps prior to submission to EIS.

CONCLUSIONS

Improvements in the quality of location and fugitive release data will help to reduce the uncertainty in RTR risk assessment results that are the basis for RTR rules.