Soil Sampling Update
April 20, 2023

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Phase 1 sampling is complete

Most preliminary data is in

Vast majority of results are within typical soil ranges

No noticeable difference between shallow and deeper soils

On-property sample results look good

A few right-of-way samples have elevated levels of compounds

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Phase 1 Sampling - Comparison Study

• Evaluate the area of interest against local background conditions
  • 1-mile radius plus 2-mile southeast extension
  • Biased/targeted samples toward ash/soot
  • Additional area of interest added due to model evaluation

• Compare shallow surface soil to deeper surface soil
  • First inch (plus soot/ash/debris if found)
  • 1-6 inches below ground surface

• Evaluate various property types
  • Residential / Commercial / Agricultural
  • Added Recreational

• NOT a risk assessment

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What is Being analyzed?

Semi-Volatile Organic Compounds (SVOCs)
- Indicator chemicals from V&B
- Common to the environment
- Other sources include pesticides, oil-based products, fire retardants.

Dioxins/Furans (Dioxins)
- Modeling predictions
- Public and elected officials concerned
- Common to environment – will never be “zero” based on risk calculation
- Sources include burning (forest fires, burn pits, smoking), car exhaust, industrial by-products

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What are Residential Screening Levels (RSLs)?

• Levels that are generally considered as lowest risk for long term exposure
  • Long term = 365 days/year & 24 hours/day

• A tool that EPA uses to determine if there is a need for further investigation

• Use of RSLs in this response ensure that proper lab analysis is conducted to achieve very low reporting limits

• For ease of reading, we’ll use parts-per-trillion (ppt) to describe dioxin data tonight

• Results tables on-line are in parts-per-million (ppm) or milligrams-per-kilogram (mg/kg)

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Screening and Action Levels - Dioxins

• NOT A RISK ASSESSMENT!

• Dioxin TEQ Values

• Residential Screening Level: 4.8 ppt* / 51 ppt

• Removal Management Level: 480 ppt / 150 ppt

• Historic EPA Action Level: 1000 ppt

• Typical level in rural soil: < 20 ppt**

• Typical level in urban soil: < 60 ppt**

* Analytical reportable levels

** Literature review on-going

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Soil Sampling

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Chips (scale?)

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Locations of Chips/Debris

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By the Numbers

• 358 total inspections
• 148 sample locations
• 2 samples per location
• Norfolk Southern collected samples at all locations under direct EPA oversight
• EPA collected “split samples” at approximately 20% of locations to verify accuracy by an independent lab.

• More coming from Pennsylvania DEP & EPA

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Analysis of Samples

• Semi-Volatile Organic Compounds
  • Residential Screening Levels (RSL): Variable (0.078 – 5,980 ppm)
  • Typical Soil Levels: Variable

• Dioxins / Furans
  • Toxic Equivalent (TEQ) value vs individual congeners
  • RSL TEQ: 4.8 ppt
  • Typical Soil Levels Urban: Up to 60 ng/kg*
  • Typical soil levels rural: Up to 20 ng/kg*
    *rough estimate - still reviewing literature

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Reviewing a Data Table

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</tbody>
</table>

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• On-Property:
  • Dioxin Result Range 2.6 – 14 ppt (only one location over 8 ppt)
  • SVOC results similar

• Public Right-of-Way:
  • Vast majority of preliminary and validated samples in typical soil range
  • 3 key dioxin outliers (>100 ppt)
  • SVOC results similar

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• Dioxin Average TEQ: ~17.9 ppt
  • Without outliers: ~7.7 ppt

• Dioxin Median: ~4.5 ppt

• City Park Dioxin Median: 3.3 ppt

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## Community Outreach

### Those who signed access agreements
- Calls being made as validated data is received
- Hard copy tables and information to follow

### Public Information
- Post Updated tables as validated data is received on EPA’s web site
- Questions? Drop by our Welcome Center or give us a call.

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Current Situation

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- Vast majority of results are within typical soil ranges
- No noticeable difference between shallow and deeper soils
- On-property sample results look good
- A few right-of-way samples have elevated levels of compounds

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Next Steps

1. Receive and validate all data
2. Post data for public review
3. Conduct statistical / trend / comparative analysis
4. Report findings
5. Develop Phase 2 sampling plan based on Phase 1 findings

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