



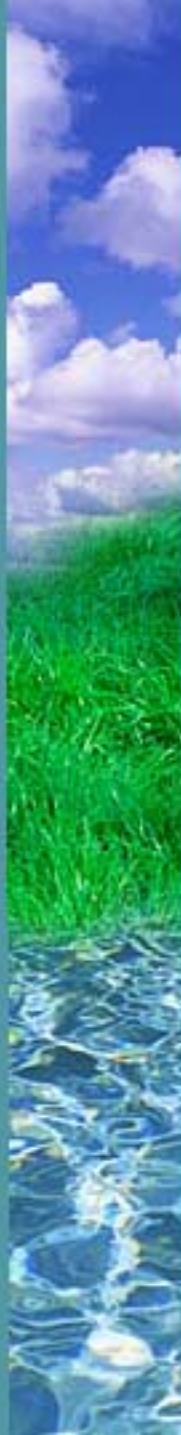
# Cleanup & Redevelopment Program Redesign

## Proposals for the Cleanup Criteria – An Introduction

Stakeholder Meeting

September 10, 2009

Christine Flaga/RRD Toxicology Unit



✓ Chris Flaga:

- Cleanup criteria history and status
- Three criteria proposals for the redesign
- Identification of 3 additional proposals to be discussed in more detail by:

✓ Amy Salisbury:

- Proposal for immediate response activity screening levels
- Proposal for vapor intrusion

✓ Divinia Ries:

- Proposal for a combined soil pathway/criteria (direct contact and ambient air)



# Current Cleanup Criteria

- ✓ Criteria promulgated into Rule December 2002
- ✓ 289 hazardous substances listed
- ✓ Residential, commercial & industrial land uses
  - 4 commercial subcategories for soil direct contact
- ✓ 6 basic exposure pathways for groundwater
- ✓ 6 basic exposure pathways for soil



# Current Exposure Pathways

## Groundwater

- ✓ Drinking water
  - Residential and Industrial/Commercial (I/C)
- ✓ Groundwater Surface Water Interface
- ✓ Groundwater Volatilization to Indoor air Inhalation
  - Residential and I/C
- ✓ Groundwater Contact
- ✓ Flammability & Explosivity Screening Levels
- ✓ Acute Inhalation Screening Levels
- ✓ Solubility
- ❖ 9 columns of groundwater criteria & screening levels



# Current Exposure Pathways

## Soils

- ✓ Groundwater Protection
  - Residential and I/C Drinking water
  - GSI
  - Groundwater contact
- ✓ Soil Volatilization to Indoor Air
  - Residential and I/C
- ✓ Ambient air
  - Residential and I/C
  - Infinite source, 2m/5m finite sources, PSIC



# Current Exposure Pathways

## Soils

- ✓ Direct contact
  - Residential/Commercial I
  - Industrial/ Commercial II
  - Commercial III
  - Commercial IV
- ✓ Soil saturation values
- ✓ Background – updated values available.
- ❖ 10 columns of residential soil criteria and 13 columns of industrial/commercial soil criteria
- ❖ Resulting in approximately 8,000 criteria and screening levels!!



# Part 201 Discussion Group 2007 Report

- ✓ Complexity Subgroup – Recommendations
  - Remove impediments to an efficient remedial response:
    - The large number of criteria and exposure pathways are some of the impediments
    - Reduce the number of exposure pathways and/or criteria?
    - Recommendation #63: reduce the number of land use categories (unrestricted residential and restricted nonresidential)
    - Update the vapor intrusion to indoor air criteria pathway
    - Evaluation and improvements to the ambient air pathway/criteria



# Program Redesign

## Primary Goals

- ✓ To make the cleanup program easier to implement
  - Improve transparency
  - Reduce technical complexities
  - Improve program efficiencies



# Toxicology Unit Review

- ✓ Pathways and criteria evaluated
  - Is it a relevant and reasonable pathway?
  - Do the criteria represent the way people are actually exposed to hazardous substances in the environment?
  - Are the methods consistent with the best available information? Are better approaches available?
  - Are any changes in the land use categories warranted?
  - Is reducing the number of ambient air and soil direct contact criteria warranted?



# Development of the Current Criteria

- ✓ The technical support documents (TSDs) were developed between 1995-1998. Describe the methodology and the basis for the generic assumptions
- ✓ EPA Guidance used - specific guidance documents available at that time:
  - 1989 EPA Risk Assessment Guidance for Superfund (RAGS)
  - 1996 EPA Soil Screening Guidance
  - 1989 and 1997 versions of the EPA Exposure Factors Handbook



# Updated EPA Guidance

- ✓ 2002, Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites
- ✓ 2002 EPA Vapor Intrusion Guidance
- ✓ 2004, RAGS, Volume I, Part E, Supplemental Guidance for Dermal Risk Assessment
- ✓ 2009, RAGS, Volume I, Part F, Supplemental Guidance for Inhalation Risk Assessment
- ✓ Exposure Factors Handbook
  - Updated version expected in 2009-10
  - 2008 Child-specific Exposure Factors Handbook



# Chemical-specific Data

- ✓ Various sources used to obtain toxicological and chemical-physical data for criteria updates
- ✓ 96% of current cleanup criteria were last updated prior to 2000
- ✓ Current cleanup criteria do not reflect the state of the science
- ✓ Chemical-specific updates are indicated



# Justification for Updates

- ✓ To assure that criteria are based on the current science
- ✓ DEQ mandated to protect public health and the environment
  - ...using the best available information (R 706(1))
  - ...and reasonable and relevant exposure pathways; generic assumptions determined to appropriately characterize human exposures (20120a(3); 21304(a))
  - 20120a(18): annual review if appropriate
- ✓ Correction of errors
  - Chemical-specific
  - Methodologies



## Proposal 1

- ✓ Reduce the number of land use categories
  - Residential (unrestricted; restricted)
  - Nonresidential (restricted).
- ✓ Reduces the number of criteria for the soil direct contact pathway by eliminating the commercial subcategories.
- ✓ Consistent with the Part 201 Discussion Group recommendation No. 63.



# Criteria-related Redesign Proposals

## Proposal 2

- ✓ Eliminate Groundwater Contact Criteria
  - For workers in a trench or excavation; dermal only
  - GCC have not been the most restrictive criteria at sites i.e., other risks control the remedy
  - Did not represent the actual exposure – more acute
    - Acute inhalation risk better addressed through proposed Acute Inhalation Screening Level
    - Acute dermal contact risk can be addressed on a chemical-specific basis via footnotes.



## Proposal 3

- ✓ Develop Immediate Response Activity Screening Levels
- ✓ Will assist in identifying short-term, uncontrolled exposures requiring immediate response.
- ✓ Amy to discuss further.



## Proposal 4

- ✓ Replace GVIIC and SVIIC with Soil Gas and Indoor Air Criteria.
- ✓ Consistent with the most recent EPA guidance and the Part 201 Discussion Group recommendation to improve the vapor intrusion pathway.
- ✓ Amy to provide details.



# Criteria-related Redesign Proposals

## Proposal 5

- ✓ A combined soil pathway
  - Revise and combine Soil Direct Contact and Soil Inhalation Criteria for Ambient Air = Soil Criteria.
    - To better represent the actual exposure – ingestion, dermal, inhalation occurring simultaneously
    - Will result in a significant reduction in the number of soil criteria
    - Elimination of commercial subcategories for DCC
    - Consistent with Part 201 Discussion Group Recommendations to reduce the # of criteria and improve and reduce SIC and DCC
  - Divinia to discuss further.



## Proposal 6

Identify a defined process and schedule for updating the chemical-specific data and criteria

- ✓ Remove the criteria from the Rules such that scheduled updates can occur
  - To be consistent with the best available information
  - Methodology, equations, and assumptions would remain in the Rules or in the Statute.
  - A 3 year cycle may be feasible



# Contact Us With Your Comments

---

[deq-rrd-redesign@michigan.gov](mailto:deq-rrd-redesign@michigan.gov)