**FACT SHEET**
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# Risk-Screening Environmental Indicators Version 2.3.2

The Risk-Screening Environmental Indicators (RSEI) Version 2.3.2 is a computer-based screening tool for the evaluation of toxic chemical emissions and transfers from industrial facilities. RSEI can quickly assess important factors related to potential chronic human health risks from industrial pollution and waste management (chronic effects are associated with low-level and long-term exposure). Whether a pounds-based, hazard-based, or risk-related perspective is chosen, the RSEI model delivers results in a matter of minutes or hours that previously would have required weeks, months, or even longer to produce. RSEI can help identify opportunities with the greatest potential for hazard or risk reduction, while saving considerable analytical resources.

## What factors does the RSEI Model consider?

The RSEI model uses annual reporting from individual industrial facilities along with a variety of other information to evaluate chemical emissions and other waste management activities. RSEI incorporates detailed data from EPA's Toxics Release Inventory (TRI), the Integrated Risk Information System, the U.S. Census of population, and other sources. Using existing EPA models, RSEI incorporates the full spectrum of risk-related factors by considering:

- the *amounts* of toxic chemicals that facilities release;
- the *environmental concentrations* attributable to these releases;
- the *doses* that people receive from these environmental concentrations;
- the relative *long-term toxicity* of these doses; and
- the *number of people* who are affected.

## How does the RSEI Model work?

The RSEI model generates unique numerical values known as "Indicator Elements" using the factors listed above. Indicator Elements are unitless—like an index number, they can be compared to one-another, but they do not represent *actual* risk. Indicator Elements are proportional to the relative risk of each release, with incrementally higher numbers reflecting greater estimated risk. These elements are generated for every possible combination of reporting facility, chemical, release medium, exposure pathway (inhalation or ingestion), and year. They serve as the building blocks for RSEI and are summed in various ways to produce risk-related results for scenarios of interest to users.

## How can the RSEI Model be used?

As its name implies, RSEI can be used for screening level activities. It does not serve as a detailed or quantitative risk assessment, but can be used to identify situations where a more formal risk assessment is needed. RSEI can compare many of the pertinent risk-related chronic human health aspects associated with industrial releases of toxic chemicals and can provide risk-related comparisons for facilities, chemicals, geographic areas, and/or time periods. Results can be generated for virtually any level of aggregation—from individual facilities to entire industries, or from local areas to the entire nation. Tracking changes in risk-related results over time is a way to measure progress in environmental protection and pollution prevention programs.

RSEI supports ranking and prioritization, strategic planning, targeting, trend analysis,

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and other assessments. Important questions that can be addressed with RSEI include:

- What are the national trends in hazard and risk associated with toxic chemical releases and other waste management activities at industrial facilities?
- What industries have comparatively more chronic human health risk associated with them?
- What is the relative contribution of specific chemicals to overall risk?
- For any given scenario, what release pathway for a particular chemical poses the greatest risk-related concerns?

Once RSEI addresses the broader questions, it can be used to interpret the risk-related results and explore which factors contribute most to a given ranking or trend. RSEI Version 2.3.2 provides a risk-related perspective for air and water releases (including those from certain off-site transfers) for the 1996-2011 TRI reporting data. It also provides other valuable perspectives for all release pathways and other waste management activities at industrial facilities, such as pounds of release and pounds of release weighted by toxicity (for a hazard-based perspective). RSEI also provides results for important groups such as children, men and women of reproductive age, and the elderly. Results can be exported to database or spreadsheet formats for additional analyses or for use with other data sets. A user-friendly interface allows the quick display of graphs or tables of information, and the RSEI Welcome Screen provides tutorials on how to use the model (these tutorials can also be found in the User's Manual).

## Where can I obtain the RSEI Model?

The installation program for RSEI Version 2.3.2 can be downloaded from the RSEI Home Page at www.epa.gov/oppt/rsei.

## Where is more information available?

The RSEI Home Page at http://www.epa.gov/oppt/rsei/ provides additional information. This site has information on the RSEI methodology, the comprehensive peer review of RSEI, important caveats, and the strengths and limitations of the model. For more specific inquiries, contact the RSEI Team in EPA's Office of Pollution Prevention and Toxics (OPPT) by email at RSEI_Indicators@epa.gov or by telephone at (202) 564-8790.

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