TAKING STOCK 2000
BACKGROUND

Commission for
Environmental Cooperation
of North America

At a glance...

- North America has reduced industrial releases and transfers of chemicals by 5 percent in the six years from 1995 to 2000.
- Reductions in releases of carcinogens were greater, almost 10 percent.
- A few facilities with the largest amounts reported large decreases; however, many facilities with smaller amounts showed significant increases.
- In 2000, more than one-quarter of the 3.3 million tonnes of releases and transfers were on-site air releases.
- A few industries account for a large portion of releases and transfers. The primary metals sector, which includes steel mills, reported the largest—over 20 percent of the total.
- Electric utilities reported over one-quarter of total releases.

The analyses presented in *Taking Stock 2000* are based on 1995–2000 data from the US Toxics Release Inventory (TRI) and the Canadian National Pollutant Release Inventory (NPRI). The data are "matched" for a particular span of years, that is, they are based on chemicals and industrial sectors that are common to both TRI and NPRI for the year(s) in question.

This report is the seventh in the CEC's *Taking Stock* series on sources and management of industrial pollutants in North America. This *Summary* report, the more detailed *Sourcebook,* past volumes of *Taking Stock* (as PDF files), and searchable access to the data sets used in *Taking Stock* analyses are all available at *Taking Stock Online* on the CEC's web site at <www.cec.org/takingstock>.

Summary of key findings

Large amounts of chemicals were released and transferred in North America in 2000.

- More than 3.3 million tonnes of 206 "matched" chemicals were reported to TRI and NPRI in 2000 by manufacturing facilities, electric utilities, hazardous waste management/solvent recovery facilities and coal mines.

Some of these chemicals are carcinogens or cause developmental or reproductive effects.

- Fourteen percent of total releases, almost 219,000 tonnes of chemicals, were known or suspected carcinogens.
- Sixteen percent of total releases, almost 254,000 tonnes of chemicals, were linked to cancer, birth defects and other reproductive harm (California Proposition 65 chemicals).

Many of these chemicals are being released into the air.

- Almost one-half of the 3.3 million tonnes were releases on- and off-site, with over one-quarter being on-site releases to air.

Most of these chemicals are being released and transferred from a few industrial sectors.

- The primary metals sector, which includes steel mills, reported the largest total amounts, over one-fifth of total releases and transfers.
- Electric utilities reported the largest total releases (on- and off-site)—over one-quarter of total releases in North America in 2000—and ranked third for total reported amounts of releases and transfers.

Many of these chemicals are being released and transferred in large quantities by a few jurisdictions.

- In 2000, the jurisdictions with the largest total reported amounts of releases and transfers were Texas, Ohio, Ontario and Pennsylvania. Together, they accounted for more than one-quarter of the total reported.
- The jurisdictions with the largest total releases (on- and off-site) were Ohio, Texas, Pennsylvania and Indiana.
- These same four jurisdictions, Ohio, Texas, Pennsylvania and Indiana, also had the largest chemical "loadings" in 2000 (chemicals released or transferred within the state/province).

Almost 700 tonnes of mercury were released and transferred in North America in 2000

- Both the US and Canada required reporting from more industrial sources of this persistent, bioaccumulative, toxic chemical for 2000.
- More than 20 times the number of facilities reported in 2000 than in 1999, due to the more stringent reporting requirements.

Data from 2000 provide the first picture of releases and transfers of the persistent, bioaccumulative toxics, dioxins and furans (the new reporting on dioxins and furans differs between TRI and NPRI, so amounts cannot be compared).

- US TRI: All industry sectors under TRI must report on dioxins and furans:
  - The chemical sector released the largest amount of dioxins and furans reported to TRI, largely due to inorganic pigment manufacturing, an activity not required to report to NPRI.
  - Twenty-five TRI facilities were responsible for over 80 percent of the total TRI amount of dioxins and furans released on- and off-site.
- NPRI: Only certain activities, such as incinerating waste, secondary smelting, and wood preservation, are required to report on dioxins and furans to NPRI.
  - Paper products, primary metals and air, water, and solid waste management facilities (primarily municipal incinerators) reported the largest releases on- and off-site of dioxins and furans to NPRI.
  - Twenty-five NPRI facilities were responsible for 85 percent of total NPRI dioxins and furans released on- and off-site in 2000.
  - Incinerators burning municipal waste (included in air, water, and solid waste management) released 14 percent of the total dioxins reported to NPRI. Such incinerators are not required to report to TRI.

Over the three years from 1998 to 2000, releases and transfers decreased overall by 4 percent; NPRI and TRI showed different trends.

- On-site releases by TRI facilities decreased by 7 percent, while on-site releases of NPRI facilities increased by 12 percent.
- Off-site releases of NPRI facilities decreased by 39 percent, while they increased by 7 percent for TRI facilities.

Facilities reporting smaller amounts of chemicals showed considerable increases in releases and transfers of chemicals, as compared with the top-reporting facilities, which showed overall decreases.

- There are approximately four times as many facilities reporting smaller releases and transfers as facilities reporting larger releases and transfers of over 100 tonnes per year (15,000 versus 3,600 facilities).
- In both TRI and NPRI, facilities reporting the largest amounts reported reductions of 7 percent. Facilities reporting smaller amounts, on the other hand, reported substantial increases in releases and transfers, for a total increase of 66 percent for NPRI facilities and 29 percent for TRI in the three years from 1998 to 2000.

Cross-border transfers changed considerably from 1998 to 2000, with Canada becoming a net exporter of chemicals for management or disposal and the US a net importer.

- Cross-border transfers to the US from Canada increased by 12 percent from 1998 to 2000. Transfers to Canada from the US decreased by 43 percent over the same period.
- Only a handful of facilities are responsible for the bulk of the cross-border transfers.

- Transfers to Mexico from the US increased by 35 percent, from 26,500 tonnes to 35,500 tonnes. Data on the amount of transfers to the US from Mexico are not available for the years 1998–2000.
- Most chemicals, however, are still transferred within national boundaries.

Some sectors reduced releases and transfers from 1998 to 2000, while others increased them.

- The hazardous waste sector had the largest decrease in releases and transfers: 91,000 tonnes, or 25 percent, from 1998 to 2000. Facilities within this sector show both large decreases and large increases.
- The fabricated metals sector had the largest increases in releases and transfers, an increase of 16,000 tonnes, or 7 percent.
- The sectors with the largest reported amounts in both 1998 and 2000 showed little change: primary metals decreased by 3 percent, and chemicals and electric utilities each decreased by 1 percent.

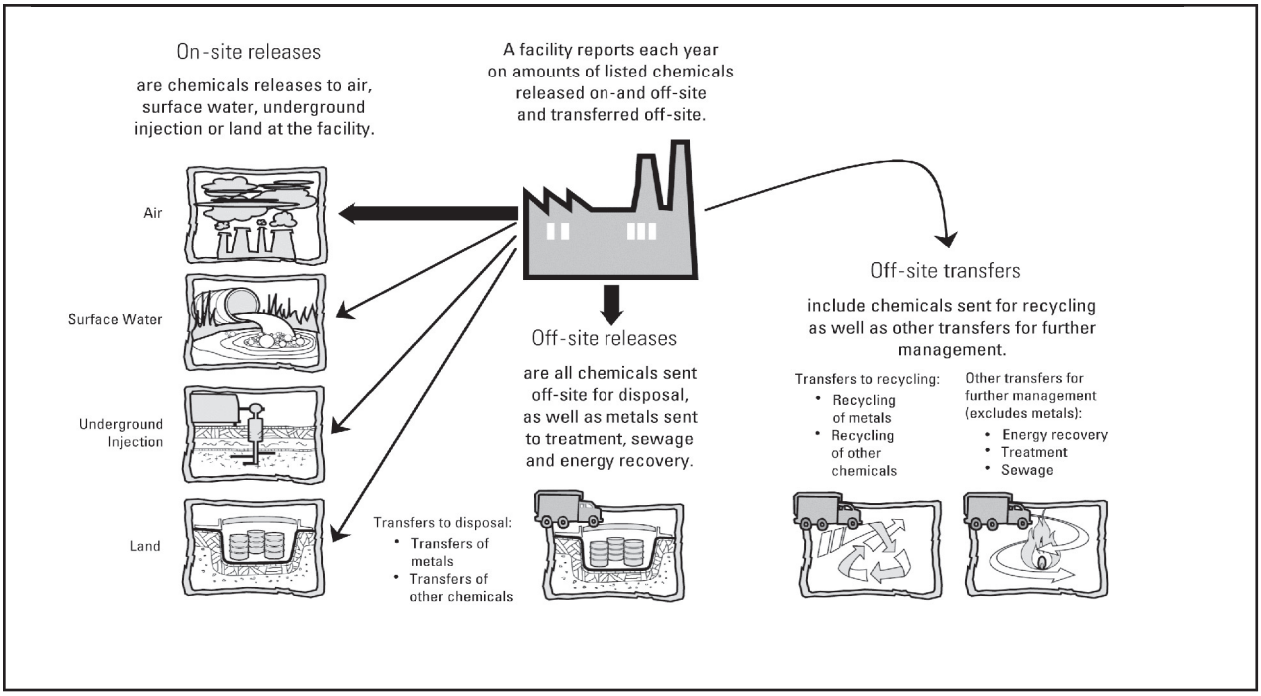
Over the six years from 1995 to 2000, some progress was made in North America in reducing on-site releases.

- Overall, on-site releases (releases to air, water, land, and underground injection at the facility) from manufacturing facilities decreased 17 percent from 1995 to 2000 in North America. TRI facilities decreased on-site releases by 19 percent and NPRI facilities by 3 percent.
- Facilities seem to be paying particular attention to reducing releases to air, which decreased by 28 percent over the six years. TRI facilities decreased air releases by 31 percent and NPRI facilities by 5 percent.
- There was little progress in reducing amounts of chemicals sent off-site. In fact, off-site releases showed a pattern opposite to that of overall on-site decreases: increasing 41 percent from 1995 to 2000. These off-site releases are mainly transfers for disposal in landfills.
- Over the six years from 1995 to 2000, facilities increased the amounts of chemicals sent off-site for treatment or in sewage by 15 percent.
- Taken overall, the change in total releases and transfers was a 5-percent reduction in the amount of chemicals requiring management over the six years.
- For chemicals with particular health and environmental significance, the results were mixed. Compared with a decrease of total releases of 8 percent from 1995 to 2000 for all matched chemicals:
  – Benzene total releases decreased by 34 percent.
  – Carcinogens decreased by 10 percent.
  – California Proposition 65 chemicals (chemicals listed because of their carcinogenic, reproductive or development effects) decreased by 28 percent.
  – Releases of the Canadian list of CEPA toxics decreased by 17 percent.
  – However, metals and their compounds had a 24-percent increase in total releases from 1995 to 2000.

Terminology

Taking Stock 2000 uses the *following categories* for presenting information on pollutant releases and transfers:

- **"on-site releases"** describes releases that occur at the facility—i.e., chemicals put into the air or water, injected into underground wells, or put in landfills "inside the fenceline."
- **"off-site releases"** describes chemicals sent off-site to other locations for disposal, as well as metals sent to treatment, sewage, and energy recovery.
- **"total releases on- and off-site"** or simply **"total releases"** is the sum of on- and off-site releases.
- **"total releases (adjusted)"** is the sum of on- and off-site releases minus those off-site releases that are reported as on-site releases by another NPRI or TRI facility.
- **"transfers to recycling"** describes chemicals sent off-site for recycling
- **"other transfers for further management"** describes chemicals (other than metals) sent for treatment and energy recovery and to sewage plants.
- **"transfers for further management"** encompasses: (1) chemicals sent for recycling and (2) other transfers for further management, i.e., chemicals (other than metals) sent for treatment and energy recovery and to sewage plants.



- **"total reported amounts"** describes the sum of all of the above categories: on- and off-site releases, recycling, and other transfers for further management. All releases as reported are included. While not perfect, this is the closest estimate available from the matched North American PRTR data of the total amount of chemicals arising from a facility's activities that need to be managed.
- **chemical "loadings"** refers to chemicals that end up with a jurisdictions borders, including on-site releases, amount transferred to other facilities within the jurisdiction and amounts received by facilities with the jurisdiction.

There are three time periods analyzed in the *Taking Stock*. The data included differ because of changing reporting requirement in both NPRI and TRI. Briefly, they are:

- **2000:** includes 206 chemicals and manufacturing industries as well as electric utilities, hazardous waste facilities and coal mines
- **1998–2000:** includes 159 chemicals and manufacturing industries as well as electric utilities, hazardous waste facilities and coal mines
- **1995–2000:** includes 159 chemicals and manufacturing industries

The Commission for Environmental Cooperation

CEC was established to build cooperation among the NAFTA partners—Canada, Mexico and the United States—in protecting shared environments, with a particular focus on the opportunities and challenges presented by continent-wide free trade. More information can be found at the CEC web site at <www.cec.org>.