Automotive Manufacturing and Maintenance
P2 National Emphasis Area (FY22-23)
P2-TRI Fact Sheet

EPA adopted six national emphasis areas (NEAs) for the FY 2022/2023 pollution prevention (P2) grant cycle. This fact sheet summarizes environmental and P2 information for one of the NEAs: the automotive manufacturing and maintenance sector (NAICS 3361, 3362, and 3363 for manufacturing and NAICS 8111 for maintenance facilities). According to the Census Bureau, the automotive manufacturing portion of this NEA includes 7,264 establishments.1,2 About 11 percent of these establishments (facilities) reported to the Toxics Release Inventory (TRI) for 2020.1 TRI tracks the management of toxic chemicals as reported by U.S. industrial facilities. Annually, facilities report to TRI how much of each chemical is recycled, combusted for energy recovery, treated, and disposed of or otherwise released to the environment.

EPA encourages facilities to first eliminate the production of waste at its source (source reduction) prior to recycling, energy recovery, treatment, or disposal. The charts below show quantities of TRI chemicals released or otherwise managed as waste by the sector as reported to TRI. P2 technical assistance providers and others may be able to use the information below to identify opportunities that prevent chemical releases through source reduction activities. Information can be explored in more depth at EPA’s TRI P2 Search Tool.

Locations of Automotive Manufacturing Facilities Reporting to TRI, 2020

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<tr>
<th>TRI Quick Facts for 2020</th>
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<tr>
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<tr>
<td>Number of TRI Facilities</td>
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<tr>
<td>Total Production-Related Waste Managed (lb)</td>
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<td>Total On-site and Off-site Disposal or Other Releases (lb)</td>
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<td>Total On-site (lb)</td>
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<td>• Air (lb)</td>
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<td>• Land (lb)</td>
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<td>Total Off-site (lb)</td>
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For more information on P2 and the EPA’s P2 Program, please contact the P2 Hub at: p2hub@epa.gov or 202-566-0799 or visit www.epa.gov/P2

2 Automotive maintenance facilities are not covered by TRI and therefore are not included in this fact sheet.
The following charts show the TRI chemicals released on site to air and water by facilities in the automotive manufacturing sector. In these charts, each metal and its compounds are combined.

### Automotive Manufacturing

**Releases to Air, 2020**

- 12.1 million pounds
- Methyl Isobutyl Ketone: 4%
- Toluene: 4%
- Styrene: 7%
- Xylene (Mixed Isomers): 12%
- n-Butyl Alcohol: 17%
- Certain Glycol Ethers: 22%
- 1,2,4 Trimethylbenzene: 17%
- All Others: 17%

**Releases to Water, 2020**

- 3,788 pounds
- Zinc: 51%
- Copper: 13%
- Lead: 5%
- Nickel: 4%
- All Others: 9%
- Manganese: 18%
- Xylene (Mixed Isomers): 12%
- Diisocyanates: 7%
- Ethylene Glycol: 4%
- Nickel: 9%

### P2 Activities Reported to TRI

The figures below illustrate the source reduction activities reported to TRI by facilities in the automotive manufacturing sector for 2016 - 2020. In the bar chart, the number of source reduction activities reported for each metal and its compounds are combined.

**Automotive Manufacturing, 2016-2020**

- Source Reduction Activities

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P2 Opportunities

Due to the nature of the automotive manufacturing industry’s activities, P2 initiatives from the metal fabrication sector may be applicable to Automotive Manufacturing facilities. See the “Metal Manufacturing and Fabrication Fact Sheet” for scrap metal, coolant and plating P2 opportunities that may also apply to facilities in the automotive sector.

Examples of P2 achievements in the automotive sector identified from published sources are listed below. Some of the sources below link to non-EPA web sites. EPA cannot attest to the accuracy of non-EPA sources and providing links to a non-EPA source is not an endorsement by EPA of the source or the information it contains.

- **Installing or upgrading vapor recovery systems.** Painting and coating operations can release volatile organic compounds (VOCs) at automotive manufacturing and maintenance facilities. Installing or upgrading vapor recovery systems in automotive paint booths may reduce the amount of purge solvent required and associated emissions.
  - The [reducing solvent emissions from vapor degreasers](#) fact sheet lists regulations and emissions standards for vapor degreasers and describes strategies for reducing solvent used and emissions from drag-out, drafts, diffusion, and sprays.

- **Re-scheduling color changes and maintenance cleaning.** Wastes are formed when purge solvents are used to clean paint booths between color changes or during maintenance. Rescheduling color changes and cleaning times can help minimize purge solvent usage.
  - The [TRI Pollution Prevention Search tool](#) includes examples of facilities implementing good operating practices including scheduling changes and maintenance procedures.

- **Finding alternatives to VOC-containing purge solvents.** Alternative cleaning solvents and cleaning methods are becoming increasingly available. There are also recycling and reuse programs available for automotive paint booth purge solvents in some areas.
  - The [University of Minnesota Technical Assistance Program (MnTAP)](#) describes maintenance practices for painting/spray booth equipment and lists resources for finding alternative cleaning equipment and solvent recyclers.

- **Replacing hexavalent chromium in plating baths.** Hexavalent chromium, a known human carcinogen, is still widely used in plating bath operations. Exploring P2 for this use would be beneficial. Trivalent chromium is generally not considered to be as toxic as hexavalent chromium and could be an incrementally preferred replacement. The only necessary equipment modification is the addition of new plating bath electrodes. However, other P2 approaches in this area should be explored as well.
  - The [Pollution Prevention Technology Profile: Trivalent Chromium Replacements for Hexavalent Chromium Plating](#) gives an overview of the plating process, regulatory requirements, and pollution prevention research regarding chromium plating alternatives with a focus on trivalent chromium alternatives.

For more information on P2 resources for the sector, go to:

- [TRI’s Automotive Sector P2 webpage](#) which summarizes: the major sources of chemical releases; how these quantities have changed over time; and the types of P2 practices implemented. To read the complete Automotive Manufacturing Profile, see Chapter 6 of [Green Energy to Sustainability: Strategies for Global Industries](#).

- [EPA’s P2 Resources Search tool](#) for a compilation of P2 case studies and other resources.

- [TRI’s Pollution Prevention Search tool](#) to explore P2 activities reported to TRI.