# APPENDIX A
# EPA-SPONSORED EMS SOURCE DOCUMENTS

Brief descriptions of EPA-sponsored EMS source documents used to develop this EMS Guide are provided below:

- A Guide to Developing an Environmental Management System for Metal Finishing Facilities, May 2004. This document was developed by the Sector Strategies Division of the U.S. Environmental Protection Agency (EPA) Office of Policy, Economics, and Innovation in partnership with the Texas Commission on Environmental Quality, the American Electroplaters and Surface Finishers Society, and the National Association of Metal Finishers.
- Environmental Management Systems Implementation Guide for the Shipbuilding and Ship Repair Industry, July 2003. This document was developed by the Sector Strategies Division of the EPA, Office of Policy, Economics, and Innovation in partnership with the American Shipbuilding Association and the Shipbuilders Council of America.
- Environmental Management Systems: An Implementation Guide for Small and Medium-Sized Organizations, NSF International, Second Edition, January 2001. This document, supported with funding from the EPA Office of Water, explains EMS concepts using the ISO 14001 standard guidance, tools, forms, and examples that are broadly applicable to many different types of businesses.
- Integrated Environmental Management Systems Implementation Guide, EPA, Office of Pollution Prevention and Toxics, EPA 744-R-00-011, October 2000. This document represents efforts by EPA to show how Design for the Environment (DfE) technical work can be used to support the development of an EMS. It unites the EMS plan-do-check-act model with DfE approaches such as the EPA Cleaner Technologies Substitutes Assessment Methodology. It contains useful EMS guidance, tools, forms, and examples and has material especially relevant to facilities with intensive chemical use.
- Integrated Environmental Management Systems, A Company Manual Template for Small Business, EPA, Office of Pollution Prevention and Toxics, EPA 744-R-00-012, December 2000. This document represents an EMS Guide, including cover page, table of contents, and complete documentation for a fictional corporation. It contains procedures and associated forms for an EMS that are designed according to the principles of the Integrated Environmental Management System Implementation Guide (see above).
- Environmental Management Review (EMR) National Report: Lessons Learned in Conducting EMRs at Federal Facilities, EPA, Office of Enforcement and Compliance Assurance, EPA 315-R-99-003, November 1999. This document presents lessons learned by EPA from its review of individual facility environmental protection programs and management systems. This program is intended to ensure compliance and progress toward environmental excellence. Supplementary EMR Checklists also are included with this document.

# APPENDIX B
# SUMMARY COMPARISON OF ISO 14001 WITH PERFORMANCE TRACK

Facilities with an ISO 14001-conformant EMS likely would meet the PT EMS criteria if the following criteria were addressed in their EMSs:

| EMS Element | Additional PT Criteria Relative to ISO 14001 Requirements |
|---|---|
| Environmental Policy | Commitments to pursue continuous improvement in environmental performance and to share information on EMS performance with the community. |
| Objectives and Targets | Measurable objectives and targets tied to performance commitments. |
| Structure and Responsibility | A defined procedure for providing appropriate incentives for personnel to meet the EMS requirements. |
| Communication | A defined procedure for communication of environmental performance improvements throughout the organization. |

Conversely, an EMS that conformed to the PT criteria would conform to the ISO 14001 EMS standard if it addressed the requirements that:

| EMS Element | Additional ISO 14001 Requirements Relative to PT Criteria |
|---|---|
| Structure and Responsibility | Management must provide resources essential to the implementation and control of EMS. |
| Training, Awareness, and Competence | Training needs be identified and procedures be established to make employees or members aware of the importance of conformance with policy, procedures, and other EMS requirements; significant environmental impacts, actual or potential, of their work activities and the environmental benefits of improved personal performance; roles and responsibilities in achieving conformance with environmental policy and procedures and with EMS requirements, including emergency preparedness and response requirements; and potential consequences of departure from specified operating procedures. Also, appropriate training should be provided to personnel, whose work may create a significant impact upon the environment and ensure they are competent on the basis of appropriate education, training, and/or experience. |
| Operational Control | Procedures exist for identifying SEAs of goods and services used by the organization and relevant procedures and requirements be communicated to suppliers and contractors. |
| Emergency Preparedness and Response | Procedures exist to identify potential for, and to respond to, accidents and emergency situations, and for preventing and mitigating the environmental impacts that may be associated with them. Emergency preparedness and response procedures be reviewed and revised, where necessary, and in particular, after the occurrence of accidents or emergency situations and be periodically tested where practicable. |
| Monitoring and Measurement | Monitoring equipment be calibrated and maintained and records maintained. |
| Records | Procedures exist for identifying, maintaining, and disposing of environmental records, including that records be legible, identifiable and traceable to the activity, product or service involved; protected against loss or damage and that retention times be established; and maintained appropriate to the system, the organization, and the task of demonstrating conformance to ISO 14001 requirements. |

# APPENDIX C
# TECHNICAL ASSISTANCE PROVIDERS FOR EMS ASSISTANCE

| Technical Assistance Provider (TAP) Options for EMS Assistance | | |
|---|---|---|
| (1) PEER Centers | Georgia Tech Economic Development Institute<br>Economic Development Building - Technology Square<br>760 Spring Street NW<br>Atlanta, GA 30332-0640<br>Contact: Deann Desai<br>Phone: (770) 605-4474<br>deann.desai@edi.gatech.edu<br>www.edi.gatech.edu/environment | Purdue University<br>Indiana Clean Manufacturing Technology and Safe Materials Institute (CMTI)<br>2655 Yeager Road, Suite 103<br>West Lafayette, IN 47906<br>Contact: Lynn Corson<br>Phone: (765) 463-4749<br>corson@purdue.edu<br>www.ecn.purdue.edu/CMTI/EMS/EMS |
| | The Zero Waste Alliance<br>One World Trade Center<br>121 SW Salmon St.<br>Portland, OR 97204<br>Contact: Larry Chalfan<br>Phone: (503) 279-9383<br>Fax: (503) 279-9381<br>lchalfan@zerowaste.org<br>www.zerowaste.org/lrc | University of Massachusetts-Lowell<br>EMS Service Center<br>One University Avenue<br>Lowell, MA 01854<br>Contact: Matthew Donahue<br>Phone: (978) 934-4741<br>matthew_donahue@uml.edu<br>www.uml.edu/ems |
| | Texas Commission on Environmental Quality<br>Small Business and Environmental Assistance Division<br>12100 Park 35 Circle<br>Austin, TX 78753<br>Contact: Ken Zarker<br>Phone: (512) 239-3145<br>kzarker@tnrcc.state.tx.us<br>http://www.tceq.state.tx.us<br>http://www.abouttexasems.org | Virginia Polytechnic Institute & State University<br>Center for Organizational and Technological Advancement (COTA)<br>110 Shenandoah Ave.<br>Roanoke, VA 24016<br>Contact: Robert Herbert<br>Phone: (540) 853-8276<br>Fax: (540) 853-8290<br>bherbert@vt.edu<br>www.cota.vt.edu |
| | University of Florida<br>Center for Training, Research, and Education for Environmental Occupations (TREEO)<br>3900 SW 63rd Blvd.<br>Gainesville, FL 32608<br>Contact: Dr. William (Bill) Engel<br>Phone: (352) 392-9570<br>Fax: (352) 392-6910<br>bengel@treeo.doce.ufl.edu<br>www.treeo.ufl.edu/ems | University of Missouri-Rolla<br>Institute for Environmental Excellence<br>246 Schrenk Hall<br>1870 Miner Circle<br>Rolla, MO 65409<br>Contact: Amy M. Gillman, EMS Program Manager<br>Phone: (573) 341-7600<br>gillman@umr.edu<br>http://campus.umr.edu/iee/index.html |

| Technical Assistance Provider (TAP) Options for EMS Assistance | | |
|---|---|---|
| | Kansas State University<br>Pollution Prevention Institute<br>133 Ward Hall<br>Manhattan, KS 66506-2508<br>Contact: Hamdy El-Rayes<br>Phone: 785-532-3246<br>E-mail: elrayes@ksu.edu<br>http://www.sbeap.org | Sustainable Earth Initiative<br>1904 Franklin St. Suite 418<br>Oakland, CA 94612<br>Contact: Gary Lucks<br>Phone: 510-268-9210<br>Email: gary@sustainableearthinitiative.org<br>www.sustainableearthinitiative.org |
| (2) The Manufacturing Extension Partnership (MEP) | MEP is a nationwide network of not-for-profit Centers in over 400 locations nationwide, whose sole purpose is to provide small and medium-sized manufacturers with the help they need to succeed. The Centers, serving all 50 States, are linked together through the Department of Commerce's National Institute of Standards and Technology. | |
| (3) Other TAPs | A comprehensive directory of PEER Centers, MEPS, and other TAPS by state can be found at http://www.peercenter.net/taps/. | |
| (4) Other Helpful Links | Office of the Federal Environmental Executive www.ofee.gov/<br><br>Environmental Management System Implementation Guide for the Meat Processing Industry http://www.epa.gov/sectors/agribusiness/complete.pdf<br><br>Compliance-Focused Environmental Management System - Enforcement Agreement Guidance http://www.epa.gov/compliance/resources/publications/incentives/ems/ems12elemr.pdf | |

# APPENDIX D
# GLOSSARY

**Cross Functional Team (CFT):** Members of a facility who are responsible for representing their area or department in several facets of the EMS (e.g., establishing environmental aspects, determining significant aspects, setting objectives and targets, implementing environmental management programs, reviewing and tracking EMS internal audits results, and serving as an information resource). The CFT meets to discuss the EMS on a regular basis.

**Document:** Written communication that presents a facility's policy, procedures, and requirements. Documents describe the EMS, provide a basis for auditing, provide continuity of the EMS and its requirements during changing circumstances, support training of personnel in EMS requirements, present the EMS for external purposes, demonstrate the conformance of the EMS in contractual situations, and allow improvement in the control of practices and environmental management activities.

**EMS Coordinator:** A member of the facility whose responsibility is to identify, assign, schedule, provide the necessary support for, and ensure completion of, all tasks relating to the EMS. The EMS Coordinator works closely with the Environmental Management Representative (EMR) and with the CFT. The EMS Coordinator also is responsible for maintaining this manual, under the leadership of the EMR. It is possible for the functions of EMS Coordinator and EMR to be performed by the same person.

**Environmental Aspect:** An element of a facility's activities, products, or services that can or does interact with the environment (create an environmental impact).

**Environmental Impact:** Any change to the environment, whether adverse or beneficial, resulting from a facility's activities, products, or services.

**Environmental Management Representative (EMR):** A member of the facility's top management group who is responsible for the functioning of the EMS. An EMR ensures that all tasks relating to the EMS are identified and completed in a timely manner. An EMR is responsible for reporting periodically to top management on the progress and results of the EMS.

**Indicator:** A measurable parameter or predictor of performance (in this case, of environmental performance).

**Nonconformity:** Discrepancy between a facility's actual EMS activities and the procedures laid out in its EMS manual and associated documentation.

**Objective:** Overall environmental goal, arising from the environmental policy, that a facility sets itself to achieve, and that is quantified where practicable.

**Record:** Written evidence established and maintained to track performance of an EMS and to demonstrate conformance with EMS requirements.

**Significant Environmental Aspect (SEA):** An environmental aspect deemed by a facility as having, or potentially having, a significant impact on the environment.

**Stakeholder:** Anyone who has a stake in your facility's environmental performance. Internal stakeholders may include employees, shareholders, customers, suppliers, investors, and insurers. External stakeholders may include neighbors, community organizations, environmental groups, larger companies, the media, and the general public.

**Target:** Detailed performance requirement, quantified where practicable, applicable to the facility or parts thereof, that arises from the environmental objectives and that needs to be set and met to achieve those objectives.

# APPENDIX E
# OVERVIEW OF FEDERAL ENVIRONMENTAL LAWS APPLICABLE TO STEEL MANUFACTURING

| Federal Environmental Laws | Applicability Overview of the Laws |
|---|---|
| **Clean Water Act (CWA)**<br>[40 CFR Parts 100-145, 220-232, 410-471]<br>Establishes ambient and point source effluent standards and permit requirements for water pollutants, including sources that discharge directly to a water body or to a public sewer system. Also includes storm water management requirements. | The CWA regulates the amount of chemicals/toxics that are being released by industries via direct and indirect wastewater/effluent discharges. If a facility is discharging directly into a body of water, then it must obtain a National Pollution Discharge Elimination System (NPDES) Permit. If a facility is discharging to a Publicly-Owned Treatment Works (POTW), then it must adhere to the specified Pretreatment Standards. These standards are usually comprised of concentration-based limits on the discharge of a given chemical or toxic by any one facility. There may be specific state or local conditions that require more stringent treatment or pretreatment requirements than those provided by the effluent guidelines.<br>▪ Effluent Limitations Guidelines and Standards for the Iron and Steel Manufacturing Point Source Category (40 CFR 420) are implemented through the NPDES permit program and through state and local pretreatment programs. The regulation contains 12 subparts, representing 12 distinct manufacturing processes in the industry. Pollutants regulated by 40 CFR 420 are divided into three categories including: conventional pollutants (e.g., total suspended solids, oil and grease, pH); nonconventional pollutants (e.g., Ammonia-N, Phenols); and priority or toxic Pollutants (e.g., total cyanide, total chromium, hexavalent chromium, total lead, total nickel, total zinc, benzene, benzo(a)pyrene, naphthalene, tertrachloroethylene.) |

| Federal Environmental Laws | Applicability Overview of the Laws |
|---|---|
| **Clean Air Act (CAA) and CAA Amendments**<br>Establishes national standards for ambient air quality and methods through which EPA and the States can implement, maintain and enforce these standards | Under Title I of the CAA, EPA established national ambient air quality standards (NAAQSs) to limit levels of criteria pollutants including: carbon monoxide, ozone, lead, nitrogen dioxide, sulfur dioxide, and particulate matter (PM). Areas that meet the standards are known as attainment areas, those that do not are classified as nonattainment areas. States must develop State Implementation Plans (SIPs) to identify sources of air pollution and to bring the State up to Federal standards. NAAQS that are often a problem for the steel industry are lead, nitrogen dioxide, and PM.<br><br>Title I of the CAA also establishes National Emission Standards for Hazardous Air Pollutants (NESHAPs), which set forth national standards for controlling sources that admit any of the 189 listed hazardous air pollutants (HAPs). EPA listed and developed a schedule for emissions standards for these sources. These emission standards will be based on maximum achievable control technology (MACT). MCAT standards have been established for the steel pickling process due to the use of hydrochloric acid in the process and the resulting hydrochloric acid and chlorine air emissions. EPA is developing an “area source rule” to address HAP emissions from EAFs. That rule, which will be promulgated in 2005, likely to include scrap management standards to address mercury, lead, and organic HAPs, and a particulate matter (PM) limit as a surrogate to control other metal HAPs.<br><br>The 1990 amendments to the CAA established New Source Review (NSR) requirements with apply to new facilities, expansions of existing facilities and process alterations. New sources of criteria pollutant emissions in excess of a certain level are subject to NSR requirements (40 CFR 52.21(b)(1)(i). There are two types of NSRs: prevention of significant deterioration (PSD) reviews for facilities in attainment areas and nonattainment (NA) reviews for faculties in geographic areas violating NAAQS. NA areas are required to meet the lowest achievable emission rate (LAER) standards, while PSD areas are required to make use of best available control technology (BACT). EPA sets the minimum standards for LAER and BACT for the iron and steel industry in its new source performance standards (NSPS), 40 CFR 60. Standards or Performance for Steel Plants concerning Electric Arc Furnaces:<br>• 40 CFR 60, Subpart AA. Regulates opacity and PM for any gases discharged from an EAF constructed between October 21, 1974 and August 17, 1983.<br>• 40 CFR 60, Subpart AAa. Regulates opacity and PM for any gases discharged from an EAF constructed after August 17, 1983 and requires continuous monitoring system for the measurement of the opacity of emission discharged fro EAF air pollution control equipment. |

| Federal Environmental Laws | Applicability Overview of the Laws |
|---|---|
| **Resource Conservation and Recovery Act (RCRA)**<br>[40 CFR Parts 240-299]<br>Establishes regulations and permit requirements for hazardous waste management. Also creates standards for underground storage tanks that hold oil or hazardous substances. | Solid waste sludge is one of the products created during the steel manufacturing process. RCRA classifies these materials and requires certain methods for treatment, storage, and disposal under each of these classifications. One of the classifications under RCRA is hazardous waste. A material is defined as a hazardous waste if the material meets the definition of solid waste (40 CFR 261.2) and that solid waste material exhibits one of the characteristics of a hazardous waste (40 CFR 261.20-24) or is specifically listed as a hazardous waste (40 CFR 261.31-33). A material thus defined as a hazardous waste is then subject to Subtitle C generator (40 CFR 262), transporter (40 CFR 263) and Treatment, Storage, and Disposal Facility (TSDF) (40 CFR 254 and 265) requirements. This establishes a "cradle-to-grave" system for dealing with hazardous waste, from its generation to its disposal. RCRA-listed wastes in steel manufacturing include EAF emission control dust and sludge (K061), which is subject to land disposal restrictions. 550,00 short tons of K061 are produced annually and 90% of this is managed for metal recovery; primary metals recovered are iron, nickel alloys, or zinc. |
| **Toxic Substances Control Act (TSCA)**<br>[40 CFR Parts 700-799] | TSCA regulates the use, development, manufacture, distribution, and disposal of chemicals. Certain chemicals (such as asbestos, chlorofluorocarbons (CFCs), and polychlorinated biphenyls [PCBs]) are subject to specific management standards.<br><br>Under recent revisions to the TSCA Section 8(a) Inventory Update Rule requirements, steel mills will be required to file reports every four years (starting in 2006) regarding the production and use of inorganic chemicals (i.e., metals) manufactured at their facility, as well as information regarding potential exposures to workers and (starting in 2012) downstream processors. |
| **Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, also known as "Superfund")**<br>[40 CFR Parts 300-311] | CERCLA establishes a program for cleaning up contaminated sites and assigns liability for clean-up costs. It also provides reporting requirements for releases of hazardous substances, reportable quantities as defined under 40 CFR 302.4, must be reported to the National Response Center (NRC). |
| **Emergency Planning and Community Right-To-Know Act (EPCRA)**<br>[40 CFR Parts 350-374] | EPCRA §304 requires facilities to notify the State Emergency Response Commission (SERC) and local emergency planning committee (LEPC) in the event of a release exceeding reportable quantities of a CERCLA hazardous substance or an EPCRA extremely hazardous substance.<br><br>EPCRA §311 and 312 require facilities in which hazardous chemicals are present to submit martial safety data sheets and hazardous chemical inventory forms to SERC, LEPC, and local fire departments.<br><br>EPCRA §313, also known as the "Toxic Release Inventory," requires facilities to inform the public about releases of hazardous and toxic chemicals. Reporting requirements apply to companies that use, process, or store specific chemicals over specified quantities. |

# APPENDIX F
# INFORMATION RESOURCES FOR ENVIRONMENTAL REGULATIONS

| Source | Description |
|---|---|
| An Environmental Self-Evaluation for Small Business – Tool #1: A Practical Guide to Environmental Compliance | A guide from the Pennsylvania Department of Environmental Protection, in PDF format, that is the first in a series of tools to help companies cost-effectively achieve compliance, provided at www.dep.state.pa.us/dep/deputate/pollprev/pdf/smal_biz.pdf |
| Aspen Law and Business<br>(1–800–638–8437) | Compliance manuals with a regular update service for the Resource Conservation and Recovery Act and the Clean Air Act. |
| Bureau of National Affairs<br>(1–800–372–1033) | Information on environmental, health, and safety laws, regulations, and activities at international, national, and state level. Paper and online access available. www.bna.com |
| Business & Legal Reports, Inc.<br>(1–800–727–5257) | Access to federal and state regulations with monthly updates on available on CD-ROM. www.blr.com |
| Compliance Assistance Tools | An overview of the resources available or in development in a wide variety of industries to assist with environmental regulation compliance, provided at www.smallbiz-enviroweb.org/pub_video/epadocs/bdocs/b08.pdf. |
| Counterpoint Publishing | CD-ROM and Internet dial-up access to legal/regulatory information on the federal government and all states, updated daily. |
| EPA Web site | Provides a variety of information on environmental laws and regulations as well as tools and compliance guidance at www.epa.gov. |
| EPA RCRA/Superfund/ EPCRA Hotline<br>(1–800–424–9346 or 1-703–412–9810) | Questions regarding pollution prevention, source reduction, waste management, and disposal may be directed to this hotline.<br>The Hotline answers factual questions about EPA regulations and programs under RCRA, Superfund, and EPCRA. |
| EPA TSCA Assistance Information Service (1-202-554-1404) | Answers questions and distributes guidance pertaining to Toxic Substances Control Act |
| EPA Office of Water (1-202-260-5700) | Will direct callers with questions about the CWA to the appropriate EPA office. |
| EPA Small Business Ombudsman<br>(1–800–368–5888) | Regulatory explanations and guidance, research, case studies, and contacts for additional information. Variety of hotlines available for particular statutes (such as RCRA). Also available online at www.epa.gov/sbo. |
| EPA General Phone Numbers | Contact the Administrator's Office at 1-202-564-4700 with compliance assurance questions. Directory assistance is available at 1-202-272-0167 (1-202-564-0260 TTY). |

| Source | Description |
|---|---|
| EPA Compliance Assistance Resources | A helpful list of EPA tools for compliance assistance, provided at www.epa.gov/compliance/resources/publications/assistance/sectors/chemicalpub.html. |
| Practical Guide to Environmental Management for Small Business | A guide, in PDF format, to getting organized and making the most of the time you and your employees spend on environmental affairs, provided at www.smallbiz-enviroweb.org/html/pdf/EM_Guide0902.pdf. |
| Resource Directory of Small Business Environmental Assistance Providers | An EPA publication, provided in PDF format, that is an easy-to-use guide of key environmental assistance providers for small businesses, at www.epa.gov/sbo/sba-directory.pdf. |
| Small Business Environmental Compliance Homepage | Provides links to several compliance assistance resources at www.smallbizenviroweb.org/compliance/compliance.html. |
| Small Business Assistance Programs<br>(various states) and Other State Agencies | Guidance on regulations and compliance issues. Initially these focused on Clean Air Act requirements, but they are expanding into other environmental media. |
| Steel Manufacturers Association<br>(1-202-296-1515) | Provides regulatory updates specific to the steel industry. |
| Thompson Publishing Group<br>(1–800–677–3789) | Manuals on a variety of Federal and State environmental programs with monthly updates and newsletters. www.thompson.com |
| U.S. Small Business Administration | Various services available to small businesses in the U.S. at www.sba.gov. |
| U.S. Government Printing Office<br>(1-202–512–1800) | Federal Register published daily with all Federal proposed and final rules. Also available online at www.gpoaccess.gov. |