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# ENVIRONMENTAL ISSUES FACING THE IRON AND STEEL INDUSTRY

Bruce A. Steiner
Vice President, Environment and Energy
American Iron and Steel Institute

Over the past 25 years, the American steel industry has been faced with an unrelenting wave of environmental laws and regulations. The Clean Air Act of 1970 and its amendments of 1977 and 1990, the Clean Water Act of 1972 and its subsequent amendments, the Resource Conservation and Recovery Act (RCRA), the Superfund law and numerous lesser-known statutes have spawned thousands of environmental regulations.

The onslaught continues. Congress is expected to consider overhauling the Superfund statute, extensive amendments to RCRA, reauthorization of the Clean Water Act, groundwater legislation, prohibitions on the use of lead in products, environmental and energy taxes, proposals to mitigate global climate change, and much more. Each will further burden American business and pose challenges that, if not successfully met, will threaten the survival of many companies and entire industries.

The steel industry has devoted substantial resources toward compliance with environmental laws and regulations. Over the past two decades, the industry has invested approximately $6 billion dollars in pollution control systems. In a typical year, 15% of the industry's capital investments are for environmental projects. Costs required to operate and maintain these facilities amount to $10 to $20 per ton of steel shipped, which exceeds industry profits even in prosperous years. These added costs have coincided with a major restructuring of the industry as it has strived to reduce costs, increase productivity, and improve quality to meet customer needs and compete in the international marketplace. Passage of the 1990 Clean Air Act Amendments will add substantially to these regulatory costs as the provisions of the Act are implemented, and costs will be difficult to recover because steel prices have remained depressed at 1980 levels. The prospects for passage of additional environmental legislation in the coming year or two represent the potential for more costs and difficult environmental challenges.

## Clean Air Act

The 1990 Clean Air Act Amendments will affect the industry in a number of significant ways. The most immediate and significant impact is tied to the requirements dealing with regulation of toxic air emissions. Under the Act, EPA is to establish Maximum Achievable Control Technology (MACT) for sources emitting any of a list of 189 chemicals, followed by tighter standards at a later date if the remaining risks are deemed to be excessive. Of particular significance for the steel industry is the stringency and timing of requirements for the industry's coke ovens. During the legislative process, it was recognized that coke

ovens required special consideration because there was no known technology that would have allowed risks to be reduced to the level mandated by the Act at most U.S. coke plants. As a consequence, these facilities were faced with shutdowns in 2003 in the case of risk-based standards and with exceedingly high costs in the short term to meet the MACT standards. In recognition of the unique coke oven problem, Congress included specific provisions for coke oven emissions. Operators may choose from two options. Under a standard time line, MACT must be achieved by 1995 and a risk-based standard by 2003. The other choice allows for postponing the risk-based standards until 2020, but to qualify for the extension, progressively tighter standards must be met in 1993, 1998, and 2010.

In late 1991, the coking industry entered into a formal regulatory negotiation with EPA and representatives of environmental groups, state and local air pollution control agencies, and the steelworkers union to develop a mutually acceptable rule to implement the terms of the Act's coke oven provisions. After a year of discussions an agreement on a negotiated rule was signed. In exchange for a standard that is structured to give operators both certainty and flexibility in the manner of demonstrating compliance, the industry agreed to compensate agencies for daily monitoring, to install flare systems to control upset events, and to develop work practice plans to minimize emissions. Perhaps the most significant aspect of the successfully negotiated rule for all participants is the avoidance of protracted litigation.

Even though the industry negotiated regulations that offer some flexibility in achieving compliance with technology-based performance standards, companies will be faced with difficult decisions of how best to utilize scarce capital to meet those standards. More importantly, coke oven operators will still face unknown but likely tighter technology-based standards in 2010 and risk-based standards in 2020.

The Act's air toxic provisions will also ultimately have other major impacts. Included on the list of chemicals to be regulated under the air toxics program are compounds of chromium, nickel, manganese, cadmium and other heavy metals. Because many of these metals are routinely found in iron ore, scrap, and alloying materials that are processed in iron and steel plants, most steelmaking processes will be affected in some way. EPA's priority list of source categories calls for the development of regulations for most of these sources by 1997, but until the Agency identifies the technology corresponding to MACT for these sources and promulgates regulations, it is difficult to determine the additional impacts and costs to the industry for this program.

Acid rain provisions of the Act will not have a direct impact on the industry because control requirements fall mainly on fossil fuel-fired electric utilities. However, the steel industry is a major consumer of electricity and is located principally in states that rely on coal for electricity generation, and rates paid by the industry and steel company electricity costs are expected to rise dramatically in some areas as public utilities pass through their costs to install emission control systems.

Also, as states develop plans to address the urban smog problem under Title I of the Act, additional requirements for nitrogen oxide (NOx) and hydrocarbon controls may be

imposed on iron and steel sources located in the urban areas where ambient air standards for ozone are not being met. NOx emissions are associated with a number of iron and steelmaking processes because of the high temperature combustion processes involved. However, the control of industrial sources is much more costly on a ton-for-ton basis than controls for mobile sources and fossil fuel-fired utilities, both of which will be controlled under other provisions of the Act. These effects should be weighed before imposing costly additional controls, but states will be imposing stationary source NOx controls before the benefits of the other NOx reduction programs can be determined.

Of course, many of the generic provisions of the 1990 Amendments - permitting, fees, new source review, enforcement, etc. - will also add administrative burdens and costs.

One other Clean Air Act matter of great interest to the steel industry is concern over a lowering of the national ambient air quality standard for PM-10, which is the designation for particulate matter less than ten microns in size. EPA will be reviewing the basis for the existing ambient air PM-10 standard over the next year or two, and some investigators have concluded that the health effects research suggests the need for a substantial tightening of the standard. Other scientists have taken exception to the methods and conclusions drawn from these studies. A lower standard would cause many more areas of the nation to be classified as nonattainment areas and would trigger requirements for states to impose much more stringent emission control standards for sources of particulate matter, including iron and steel sources. AISI's interest is to assure that proper scientific methods and procedures are employed in any efforts to revise the PM-10 standard.

Clean Water Act

Many of the Clean Water issues facing the industry are manifest in current efforts to develop uniform water quality standards in the Great Lakes states, where about 80% of the nation's integrated steelmaking capacity is located. The Great Lakes Water Quality Initiative (GLI) is the domestic regulatory response to a series of agreements signed between the U.S. and Canada. In November of 1990 Congress passed legislation that set timetables for EPA and the states to develop guidance for establishing and implementing uniform water quality guidance in the Great Lakes basin. EPA was to propose guidance by mid-1991 and then issue final guidance by mid-1992, and the states were expected to adopt rules within two years. However, this schedule has not been met because of the complex technical, economic, and sociological aspects of this endeavor. AISI has been an active participant in the development of the proposed regulatory package, not only because of the high percentage of steelmaking capacity in the region but also because the GLI represents a microcosm of things to come on a national basis.

The main concern the steel industry has with the GLI is the establishment of uniform water quality guidance for all waters in the basin without regard to the multiple legitimate uses of water bodies within this large region. AISI believes that states should be given the responsibility of designating uses and associated water quality standards for all water bodies within their jurisdictions. The designations should have as their goal the attainment of fishable, swimmable water quality for all water bodies, but should take into account the

feasibility of attainment of that goal where naturally occurring pollutants prevent its attainment, where pollution sources prevent attainment and correction of these sources would cause more environmental harm than good, or where attainment would result in unreasonable social and economic impacts. Setting standards for the entire region on the basis of the most sensitive ecosystem, or requiring discharges of non-contact cooling water to be cleaner than when drawn from the stream or lake, while at the same time disregarding the water quality impacts of non-point sources such as urban or agricultural runoff, have the effect of imposing huge costs, restricting growth, or forcing zero discharge on direct dischargers.

To assess the impact of proposed GLI rules on the U.S. iron and steel industry, AISI commissioned an engineering study to develop estimates for treatment facilities to meet the GLI standards. The study shows that the failure to grant credits for the quality of intake water has a dramatic effect on the costs necessary to meet the proposed standards. Capital cost requirements for a typical integrated plant with a capacity of three million tons per year are estimated to be $150 million. Projecting this figure to the entire integrated steelmaking capacity in the Great Lakes states, GLI compliance is estimated to amount to $2.7 billion. Annual operating costs would amount to about 15% of the capital costs or $400 million.

Another aspect of the GLI is a provision for the establishment of so-called Tier 2 criteria, where additional standards can be established on the basis of only very limited scientific data. The study concludes that the costs of only one such standard could add as much as $320 million in capital costs for that segment of the industry located in the Great Lakes states. A number of other technical aspects of implementing the GLI add even more costs and also need to be assessed.

These extremely high costs of compliance are of great concern to the industry. The EPA's Science Advisory Board has questioned whether it is proper to continue reducing point source contributions when they are not the main source of water quality problems, especially in light of improving water quality under existing point source programs. Many of the requirements of the 1987 Amendments to the Clean Water Act are only now being implemented. Until non-point sources can be properly addressed and other lakewide management plants and remedial action plans under development can be carried out, AISI recommends that the enormously costly provisions of the GLI be deferred or remain optional for states to implement.

Many of the issues being addressed under the GLI are also expected to be debated in any comprehensive revisions to the Clean Water Act, and the steel industry will need to continue to address these topics as they emerge in any proposed legislation.

RCRA

Under RCRA the steel industry will continue to be confronted with numerous important regulatory and legislative initiatives. The RCRA regulatory program has become enormously complex as a result of piecemeal regulatory approaches, court decisions, and various exclusions and administrative interpretations. Reform is badly needed to make

the definitions of solid and hazardous wastes more understandable and consistent with the environmental statutes. EPA was making great progress in this area with their proposed Hazardous Waste Identification Rule (HWIR), but political considerations caused them to withdraw it and to further delay these needed changes. The processing and recycling of secondary materials is another area that requires a comprehensive and consistent regulatory approach. Regulatory requirements cannot be allowed to become so burdensome and complicated that beneficial recovery, recycling, and reuse of secondary materials or wastes is discouraged. EPA appears to recognize the need for these reforms and has formed working groups with representatives from the various interested parties, and the steel industry is an active participant in these deliberations.

The iron and steel industry has a special and unique interest in the recovery/recycling/reuse aspect of RCRA because of the huge amount of material that is handled between the time iron ore is removed from the ground until a steel product is made. Commercial markets have been developed for secondary materials such as blast furnace slag and steelmaking slags, and their use conserves natural resources by replacing materials otherwise derived from virgin materials. Other secondary materials such as iron-bearing dusts and sludges generated from a variety of sources within steel plants are also typically returned to the steelmaking process. Coke oven waste materials are also commonly returned to the coke ovens, and used oils are reclaimed for reuse. These practices need to be allowed to continue or these materials will become part of the solid waste stream.

Electric are furnace (EAF) dust has been the subject of particular regulatory attention by EPA. EAF dust is a listed hazardous waste (designated K061) and is subject to land disposal restrictions under RCRA. EPA has developed standards of performance for EAF dust that is stabilized for land disposal or that is processed for metals recovery. Major concerns of the industry with respect to EAF dust rules are the limitations that are placed on the ultimate disposal or uses of non-hazardous residuals from the high temperature metals recovery processes or other restrictions on that processing technology that might serve to discourage or inhibit metals recovery practices. It is the industry's view that regulations governing the processing or disposal of secondary or waste materials should not be based upon the genealogy of the material but instead on the degree to which the material or its management pose a threat to human health or the environment.

EPA's requirements for corrective action of waste management units are also of great concern to the steel industry. Under RCRA, companies seeking permits are required to assess all historic releases of hazardous constituents from any solid waste management unit at the facility and to take corrective action to remediate those sites. Companies must also provide financial assurance for the costs of performing that corrective action. Because of the size and age of many steel plants and the diversity of operations and waste management practices over the life of those plants, there are commonly dozens or even hundreds of solid waste management units subject to corrective action requirements. An analysis of the cost exposure at integrated iron and steel plants has shown the potential cleanup costs to be approximately $3 billion for the industry if the boundary of each waste unit is deemed to be the point of compliance for groundwater standards. A supplemental study showed that these costs could be greatly reduced without significant

adverse effects on human health or the environment if companies are permitted to manage their corrective action on a plantwide basis.

Because of the magnitude of costs involved for corrective action, if EPA requires the application of financial assurance tests equivalent to those for closure and post-closure care for RCRA hazardous waste facilities, most steel companies will be unable to make the necessary demonstrations. AISI believes that financial tests for corrective action should be structured to recognize the overall financial strength of companies and to provide maximum flexibility to allow firms to demonstrate coverage for corrective action costs in a manner that preserves the economic viability of the companies. AISI is pursuing both regulatory and legislative solutions to address these corrective action problems.

RCRA legislative debates have included many of these same issues and more. Of particular interest to the steel industry have been issues relating to packaging and recycling mandates. Steel is presently the most recycled material in commerce, and its unique magnetic properties facilitate its separation from other materials. For this reason, AISI supports efforts to provide incentives for increased recycling of materials to conserve natural resources, decrease energy consumption, and minimize waste. However, efforts to encourage recycling by setting minimum recycled material content standards must have realistic and attainable goals and must reflect the realities of processing technology and the important need to recycle materials other than those classified as post-consumer.

In addition to possible mandates for recycled content of packaging materials, several other RCRA issues have implications for steel products. Efforts to limit uses of lead are of concern to the industry because of the manufacture of leaded steels and some coated steels containing lead. Labeling requirements also may be required for some steel products. Federal procurement standards designed to minimize the use of toxics or to encourage recycling also pose challenges for steel products. In fact, the toxic use reduction or "pollution prevention" movement is of some concern to the industry because many metals that are commonly found in steel products - chromium, nickel, lead, manganese, etc. - are often included on lists of substances targeted for reduction. Any efforts to remove these materials from raw materials or products or to impose processing restrictions should be undertaken only if their use is shown to pose a significant threat to the environment.

Superfund

Superfund reauthorization is expected to be among the higher priority topics on the environmental legislative agenda in the 103rd Congress. Although involvement of steel companies at Superfund sites is generally less than some other industries, questions of liability, funding mechanisms, selection of remedies, application of risk concepts, and the general conduct of the program all are important issues for the steel industry. Moreover, many of the regulatory policies under Superfund have implications for corrective action requirements under RCRA.

Global Climate Change

Finally, the steel industry has great concern and interest in any legislative initiatives dealing with the global climate change issue. Steel is a highly energy intensive industry. Energy costs amount to 20-25% of the manufacturing cost of steel. About 60% of that energy is derived from coal, principally that required as a raw material to produce coke used in blast furnaces to convert iron ore to iron. In contrast to other energy consumers, there are few alternatives to the use of this coal. Although there are some developing technologies for producing iron or steel directly without the need for coke, these technologies are still principally coal-based. In addition, much of the electricity consumed by the industry is produced in coal-fired power plants.

Because of the role of coal in the steelmaking, carbon taxes would have a disproportionate impact on the steel industry. A recently completed study of the economic and employment impacts of climate change policies concludes that a $25/ton carbon tax would lead to over 20,000 direct job losses in the steel industry. Carbon taxes or other energy taxes would be especially troublesome in terms of the industry's international competitiveness, even if similar taxes were imposed in other OECD countries.

Mandated energy efficiency improvements may also pose problems for the industry depending on the baseline year established to gauge those improvements. The industry has already reduced energy consumption for each unit of steel produced by about 40% since 1975 through energy conservation measures, process improvements, and consolidation of the industry at the more productive and modern plants. However, additional reductions will be much more difficult to achieve. Further reductions in energy use are likely to come about by technological improvements, but investments required to make those improvements could be impeded if the industry cannot remain competitive and generate profits from which those investments can be made.

Increasing the corporate average fuel economy (CAFE) of automobiles has also been identified as a possible initiative to encourage energy conservation and reduced carbon dioxide emissions to address the global climate situation. Although more efficient use of steel has contributed significantly to the improved fuel economy of today's domestic automobile fleet, downsizing of the fleet to meet existing CAFE standards has already had a substantial impact on iron and steel markets. If fuel economy standards are set so high that further downsizing is the only means of attaining those standards, steel markets and steel company financial positions will be further depressed. Further application of proven technology may lead to modest increases in automobile fuel efficiency, but large mandatory increases can be obtained only by major downsizing of cars and trucks, which will have major deleterious effects on the American steel industry, limit consumer choices, compromise vehicle safety, and have little effect on oil dependency or the emission of greenhouse gases.

Conclusion

The combined effect of these regulatory and legislative initiatives, coupled with a more aggressive environmentalist agenda and a new Administration, make certain that the

environment will continue to be one of the more important public policy issues facing the iron and steel industry in the coming years. The environment in the U.S. is cleaner today than at any other time in the 20th Century because of the nation's strong programs and substantial investments. However, further improvements will come in much smaller increments and at increasingly disproportionate costs. The U.S. must proceed cautiously in enacting and implementing additional environmental requirements and must balance environmental goals with considerations for maintaining a viable manufacturing base that can compete with other countries of the world where environmental requirements are not as extensive.