incinerated. To reduce the amount of emissions that may occur as a result of crushing asbestos materials, EPA's NESHAPS regulations have specific requirements for asbestos materials at active and inactive waste sites. These include covering such materials every 24 hours with compacted nonasbestos materials, or using resinous dust suppressants to bind dust and to control wind erosion, etc. Although there are insufficient data to determine how much asbestos is emitted from the incineration of waste products, one study suggests that incineration could be significant in causing air pollution in the U.S. and that incineration of products emits about 220 tons of free asbestos fibers annually from all municipal incinerators (Exhibit No. 84-417, p. 289). It has not been established to what extent asbestos fibers survive incineration and still remain biologically active. It has been estimated, however, that fibers such as chrysotile would decompose at 900 degree Farenheit into other forms of minerals under the intense heat of incineration (Exhibit No. 84-417, p. 289).

Emissions occurring when asbestos-containing materials are torn or ripped out, or crushed generate potential waste products. As mentioned earlier, this would depend on the operation and control method used. In some manufacturing processes, for example, wastewater is recirculated and reused and air is filtered, cleaned and recirculated, in some secondary manufacturing industries, scrap materials may be reused or recycled (see Technological Feasibility, Section VII, above). Also, solid wastes that might be generated from various processes are not necessarily disposed of at waste sites because many such materials are incinerated.

In many instances, construction and renovation types of activities do not necessarily produce solid waste as asbestos abatement frequently involves encapsulation rather than the ripout of materials. The amount of potential friable asbestos and waste resulting from demolition and renovation operations would probably not change significantly, as these would be based largely on asbestos construction materials present in already-existing structures. It is anticipated, however, that waste and debris that may have been left at the worksite and not disposed of as current practice will now be removed promptly and will be labeled and disposed of properly.

As with the current asbestos standard, these asbestos-containing materials, waste, debris, sludge, etc., would be collected and removed from the worksite and disposed of in properly labeled, impermeable bags or closed containers, and deposited in a designated waste area. As many such activities may already comply with the disposal requirements of the current standard and with EPA guidelines for demolition, it is uncertain where disposal practices will increase measurably as a result of the rule. There are not data to indicate that as a result of the rule, wastes will be handled less efficiently than at present. Rather, as a result of the training provisions of the rule, worker awareness of asbestos materials and their hazards would be increased, thereby providing a potential for increased proper handling and use of these products which, in turn, could benefit the external environment, both at the worksite and the waste site.

In addition, the final rule provides an incentive for the use of these materials to be reduced, or to be replaced by suitable substitutes. It is highly likely that as a result of the rule, other materials will be used in place of asbestos which would result in fewer asbestos fibers being captured, dumped, or recycled. In such instances, fewer asbestos-containing products would be disposed of in landfills and would pose less of a risk as potential sources of emissions, thereby benefitting the external environment.

Energy and Land Use

The implementation of required engineering controls to comply with the PEL of 0.2 f/cc could result in an increase in total energy requirements, or costs, for general industry. This would be particularly true, of course, where controls are not in place or where the current PEL of 2 f/cc is not met. Some potential energy factors are briefly described here.

Where local exhaust ventilation (LEV) is the primary method of control, the annual operating costs would include the additional expense of heating or cooling the replacement air brought in from the outside to run the LEV system. Based on the model plant approach presented earlier in calculating costs of compliance, it was estimated that most model plants in general industry would require a 50-percent increase in the volume of air (cubic feet per minute) to run the LEV systems in order to comply with the standard. The exception would be the gasket industry, where it was estimated that a 20-percent increase would be required and the textile sector, where it was estimated that a 200-percent increase would be required. The energy costs for makeup air units for local exhaust ventilation air exchange were estimated at $8.9 million per year for general industry (Exhibit No. 345, p. VI-11).

Where vacuums are used to clean up spills, wastes, etc., it was estimated that each unit uses 1 kilowatt of electricity at $0.09384/kilowatt hour. The energy requirements for the use of vacuums for general industry was based on an increase of 2 hours for 250 days for all industries except secondary gaskets, where the use was estimated to be for 50 days. Specific cost estimates are presented in Section VII of this Notice and in the final Regulatory Impact Analysis (Exhibit No. 345).

In terms of land use, OSHA does not project any significant impact on land use plans, policies, or controls. OSHA does not anticipate any significant impact on the short-term uses of man's environment or upon the maintenance and enhancement of long-term productivity beyond those presented in this Notice.

Other Impacts

The final rule could also have other impacts that may affect the external environment. As mentioned earlier, the rule could encourage the further use, research, and development of suitable substitutes. This, in turn, would result in a positive environmental effect because less asbestos would be used, and fewer fibers would be emitted to the air or discharged as wastewater effluent or as solid waste. The magnitude, or probability, of these impacts, however, is impossible to quantify. (See the discussion of Economic Impacts in Section VII above.)

Overall, the projected impacts of the proposed standard on the external environment are expected to be insignificant, especially in view of EPA's proposed ban on asbestos (40 CFR Part 763; 51 FR 19:3738-3759; January 16, 1986) and on current EPA regulation of air emissions, water effluents, and solid waste disposal methods.

Summary

Under the revised rule, a variety of control methods and work practices would be implemented. These include enclosures or isolation of asbestos-producing processes, regulated areas, monitoring, local exhaust ventilation with HEPA filter dust collection systems, HEPA vacuums, general ventilation, wet methods, disposal of asbestos wastes in leak-tight containers restrictions on the use of compressed ai[r] and spray-on asbestos containing materials, training, showers, and hygiene facilities, lunch rooms, shower[s] glove bags, etc. To the extent that these types of practices are employed as a