permits; whether permits would be transferable; whether permits would be bankable; and how imported products containing asbestos would be treated. EPA also considered a number of options before adopting its current regulatory strategy for controlling the risk from asbestos. These options are discussed in documents which are included in the rulemaking record.

V. Finding of Unreasonable Risk

EPA has weighed the health risks from continued use of asbestos and asbestos-containing products against the costs attributable to the proposed regulation. EPA has concluded, that the avoidance of about 1,930 cancer cases that can be quantified assuming current exposure levels, or the 1,000 cancer cases that can be quantified assuming strict compliance with an OSHA PEL of 0.2 f/cc, many other cancer cases that cannot be quantified, and many cases of asbestos-related disease substantially outweigh the costs to consumers, producers, and users of asbestos products from the proposed regulation. Therefore, EPA finds that the continued mining and importation of asbestos and asbestos products in the United States for domestic use and for export present an unreasonable risk to human health. The finding is based on the following points:

1. The health effects from asbestos exposure are very serious. Asbestos is a demonstrated human carcinogen. The cancers caused by asbestos are usually fatal and cause much pain and suffering. In addition, asbestos causes other lung diseases such as asbestosis.

2. Available evidence supports the conclusion that there is no safe level of exposure to asbestos. This conclusion is consistent with present theory of cancer etiology and is further supported by the many documented cases where low or short-term exposure has been shown to cause asbestos-related disease.

3. Models developed to estimate the relative risk of developing cancer from exposure to asbestos show a linear dose-response relationship. Based on data from epidemiology studies, these models predict that humans exposed to very low levels of asbestos incur some risk. Individuals frequently exposed to levels typically found at asbestos worksites are estimated to have very high risks of contracting cancer, perhaps greater than 1 in 100.

4. Asbestos fibers are colorless, odorless, and frequently invisible, thus presenting risk to persons not aware that they may be exposed. Asbestos fibers are extremely durable and have aerodynamic properties that allow them to remain suspended in the air for a long time. Asbestos fibers easily reenter the atmosphere after settling out and can travel long distances through the air.

5. Health risks from exposure to asbestos fibers during the lifecycle of the asbestos products covered by this proposed rule occur to many population groups during many activities. Persons can be exposed to asbestos fibers long after those fibers have been released to the air and at a considerable distance from the source of release. The vast majority of the general population of the U.S. is exposed to asbestos in the air. More than 40,000 workers are exposed during manufacture and processing of asbestos products covered by this proposal. Many additional thousands of workers and consumers are exposed during product installation, use, maintenance, renovation, removal, and disposal of asbestos products. Finally, many millions of people who reside near asbestos worksites are also exposed to significant concentrations of asbestos in the air.

6. Using typical, rather than worst-case, data and assumptions, EPA has estimated that this proposed rule banning certain asbestos products and phasing out all others, if promulgated, would avoid approximately 1,930 cases of cancer which would otherwise result from exposure to asbestos between the years 1985 to 2000. EPA underestimated the number of cancer cases avoided because of the lack of comprehensive data on releases of asbestos to the ambient air from many activities. EPA estimates that the following numbers of cancer cases would be avoided as a result of the proposed product bans, assuming both current exposure levels and strict compliance with an OSHA PEL of 0.2 f/cc.

Product	Cancer cases avoided	
	Current exposure	At 0.2 f/cc
Asbestos clothing	1	0
A/C pipe	533	82
Floor tile	488	488
Flooring felt	0	0
Roofing felt	4	4

These estimates of cancer cases avoided by the product bans should not be viewed in isolation, since asbestos use in other product sectors would theoretically decrease at less than the current rate unless all asbestos use is phased out.

7. Even if OSHA promulgates and achieves strict compliance with a PEL of 0.2 f/cc, almost 1,325 cancers would still result from asbestos products made over the next 15 years. This rule would avoid about 1,000 of those cancer cases.

8. The estimated costs of this proposed rule are reasonable in view of the number of cancers and other adverse health effects that would be avoided. Substitutes for asbestos are readily available for many products and can be expected to become available during the phase-down period for most, if not all, other uses. Even though the costs are probably overestimated, the cost per cancer case avoided, assuming current exposure levels, that EPA can quantify, is about $1.02 million. Even if OSHA promulgates and achieves strict compliance with a PEL of 0.2 f/cc, the cost per cancer case avoided that EPA can quantify is about $1.99 million. If all cancer cases and the incidence of other diseases could be quantified, the cost per case of disease prevented would be substantially lower. In addition, the overall costs of the rule are spread over a large population so that the cost to any individual would be negligible. Further, EPA expects substantial savings to result from this rule from such factors as avoided costs in treating asbestos related diseases, avoidance of lost productivity caused by these diseases, avoided costs in asbestos removal and disposal, and avoidance of litigation costs resulting from asbestos disease claims.

EPA also finds that the costs of alternatives 1, 2, and 3 are reasonable in view of the numbers of cancers and other adverse health effects that they would avoid. The costs per cancer case avoidnd that EPA can quantify of these alternatives are approximately the same as for the proposed rule.

As discussed earlier, EPA conducted a sensitivity analysis to see how sensitive the cost per cancer case avoided by this rule and the cost per cancer avoided by the regulatory alternatives discussed earlier were to the banning of particular products. Specifically, EPA analyzed the cost per cancer case avoided for the proposal and the other options excluding asbestos-cement pipe or vinyl-asbestos floor tile from the bans. Even with these relatively high exposure products excluded from the bans, the cost per cancer case avoided by the proposal and the alternatives are similar.

For example, without a ban of asbestos-cement pipe and assuming strict compliance with an OSHA PEL of 0.2 f/cc, this proposed rule would cost about $1.98 million per cancer case avoided that EPA can quantify. Without a ban of vinyl-asbestos floor tile and assuming strict compliance with an OSHA PEL of 0.2 f/cc, this proposed rule