

Letters

Asbestos-Related Cancer

To the Editor:

In the Guest Editorial on occupational cancer by Dr. Philip Landrigan in the March/April issue,¹ I can't believe the statement that "more than 50 percent of asbestos workers die of asbestos-related cancer." There are varying degrees of asbestos exposure depending on the workplace. Also, there are several types of asbestos and some have no association with cancer.

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Reference

1. Landrigan PJ: The prevention of occupational cancer. *CA Cancer J Clin* 1996;46:67-69.

Author's Reply:

Asbestos is a proven human carcinogen. It has been declared carcinogenic by the US Environmental Protection Agency, the International Agency for Research on Cancer of the World Health Organization, and regulatory bodies in nations around the world.^{1,2}

Asbestos can cause a variety of different cancers. These include malignant mesothelioma, lung cancer, cancer of the throat, cancer of the larynx, and gastrointestinal cancer.³

The relationship between asbestos and cancer was first recognized among workers who had been occupationally exposed as miners, shipbuilders, and insulation workers. Among these workers who labored directly with asbestos, the risk of asbestos-related cancer has been fearsome. More than 50 percent of the workers in some of these groups have subsequently died of lung cancer, malignant mesothelioma, and other asbestos-relat-

ed diseases. These are the high-risk groups to whom I refer in my editorial. The high rate of malignancy observed among these groups illustrates the point that risks of occupational cancer are not distributed evenly across the American population. Instead, these risks are highly concentrated in those segments of our population who are most heavily exposed to carcinogens.⁴ Any degree of exposure to a proven carcinogen such as asbestos involves some risk; no safe threshold level of exposure has been established. Clearly, however, the degree of risk is related to the degree of exposure. Risk increases with the extent and severity of exposure. Dr. Gerrits is quite correct in noting that the risk of asbestos exposure depends upon the degree of exposure.

Dr. Gerrits is incorrect in asserting that some types of asbestos are safe. Contrary to Dr. Gerrits' claim, extensive clinical and epidemiologic research indicates that all forms of asbestos are fully capable of causing human malignancy.^{1,2} All three major types of asbestos—chrysotile, crocidolite, and amosite—have been shown in epidemiologic studies to cause lung cancer, malignant mesothelioma, and other cancers. Also in experimental studies, all forms of asbestos have been shown capable of inducing malignancy in laboratory animals. To be sure the asbestos industry, particularly the producers of Canadian chrysotile asbestos, the form of asbestos most commonly used in the United States, have claimed that certain forms of asbestos present little hazard to human health. The manufacturers have used those claims as the basis for extensive marketing campaigns overseas, particularly in developing countries.^{5,6} However,

those claims are without factual basis. They resemble similar false claims made even to this day by the tobacco industry.

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References

1. US Environmental Protection Agency: Airborne Asbestos Health Assessment Update (EPA/600/8/84/003 F). Washington, DC, EPA, 1986.
2. International Agency for Research on Cancer: IARC Monograph: Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vols. 1-29, Suppl 4. Geneva, Switzerland, World Health Organization, 1982.
3. Selikoff IJ, Churg J, Hammond EC: Asbestos exposure and neoplasia. *JAMA* 1964;188:22-26.
4. Landrigan PJ: The prevention of occupational cancer. *CA Cancer J Clin* 1996;46:67-69. Guest Editorial.
5. Wall Street Journal: Canada: Encourages mining of asbestos, sells to third world. *Wall Street Journal*, September 12, 1989.
6. Jayaratnam J: The transfer of hazardous industries. *J Soc Occup Med* 1990;40:123-126.

To the Editor:

In the article on carcinogens and the workplace by Stellman and Stellman in the March/April issue,¹ Table 2 simply lists asbestos as though all forms of asbestos were the same. Table 5 does identify chrysotile but does not give any data on the workers' smoking habits.

The article should list all six geologic types of asbestos or at least the tree types that have been used in commerce. One of the three, known as "blue" asbestos (crocidolite), causes serious lung problems. It was imported and used during World War II in ship construction and as a filter in Kent cigarettes with disastrous results in both cases, but the US government has taken no action against either the US Navy or the Lorillard Tobacco Company. The other hazardous form of asbestos is the brown (amosite) asbestos, which was imported from Africa and used in a factory in Patterson, NJ, with unfortunate results.

Soft "white" asbestos (chrysotile) is the kind of asbestos the federal government has declared war on despite the documented fact that even lifetime exposure to concentrations as high as two fibers per cc of air have not been shown to produce any significant hazard in the absence of concomitant cigarette smoking.

All but one of the references in the Stellmans' article refer to undifferentiated asbestos and only one made the connection between cigarette smoking and shipyard work. Was this crocidolite? I can't tell from the text, the references, or the tables. It is interesting that no form of asbestos is listed in Tables 3 or 4.

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Reference

1. Stellman JM, Stellman SD: Cancer and the workplace. *CA Cancer J Clin* 1996;46:70-92.

Authors' Reply:

The evidence for carcinogenicity of asbestos as well as the other substances mentioned in the article "Cancer and the Workplace"¹ was based on assessments published in the monographs of the International Agency for Research on Cancer (IARC). These assessments are made by consensus of international working groups of experts from academia, government, and industry.

In the article, asbestos appropriately appears in Table 2 (IARC Group 1 - known human carcinogen) and not Tables 3 (probable human carcinogen) or 4 (broad occupational exposure circumstances) precisely because it is a specific substance with recognized carcinogenic potential by IARC.

While some mineralogic forms of asbestos may be quantitatively more carcinogenic than others, none is "safe." The hypothesis that chrysotile asbestos in particular is less hazardous than amphibole

varieties (crocidolite, amosite, tremolite) has recently been critically reviewed by Staynor et al,² who concluded that “mechanistic and lung burden studies do not provide convincing evidence for the amphibole hypothesis,” while toxicologic and epidemiologic studies provide “strong evidence” that chrysotile is associated with an increased risk of lung cancer and mesothelioma. Table 5 of the article¹ documents a dose-response for lung cancer in both male and female textile workers exposed primarily to chrysotile asbestos³ in one of the studies that provides key results in analyzing the carcinogenic potential of chrysotile alone. While there is some evidence that the risk of mesothelioma associated with exposure to chrysotile may be less than that for other forms of asbestos, it is not zero. Moreover, there is “absolutely no epidemiologic or toxicologic evidence” that chrysotile asbestos is associated with a lower risk for lung cancer,² which occurs far more frequently in asbestos worksets than does mesothelioma.

Workers in the United States and elsewhere are almost always exposed to mixtures of different types of asbestos, so that the amphibole theory, even if partly correct, is largely academic in occupational settings.

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References

1. Stellman JM, Stellman SD: Cancer and the workplace. *CA Cancer J Clin* 1996;46:70-92.
2. Staynor L, Dankovic DA, Lemen RA: Occupational exposure to chrysotile asbestos and cancer risk: A review of the amphibole hypothesis. *Am J Public Health* 1996;86:179-186.
3. Brown DP, Dement JM, Okun A: Mortality patterns among female and male chrysotile asbestos textile workers. *J Occup Med* 1994;36:882-888.