on fatal, work-related acute inhalation injuries. However, the title and its placement in the section on occupational and environmental lung disease is misleading. Moreover, nowhere in the article is there specific reference to the fact that it deals only with acute exposures. By conservative estimates, there are at least 8,000 deaths annually in the United States caused by occupational asbestos exposure, almost all of which qualify as being caused by “fatal, work-related inhalation of harmful substances.” As one who has represented these victims for > 25 years and who continues to focus on both the litigation and legislative contexts in which our society must deal with occupational lung disease, I am concerned when a journal as prestigious as yours even inadvertently creates the opportunity for miscitation and inappropriate minimization of the real occupational disease problems still facing our society. Perhaps an appropriate qualification is in order. I would also suggest a little more attention to the “trappings” surrounding even the most useful of articles.

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REFERENCE

To the Editor:

Mr. Kazan is right when interpreting that our article1 in the March 2002 issue of CHEST deals only with acute exposures. However, we do not think that any misunderstanding could arise from the reading of the article, as we clearly state throughout the abstract and the article that we focus on occupational injuries. There is a consensus in the medical and epidemiologic community about what constitutes an injury. It might be useful, however, to report here the definition provided by the US Bureau of Labor Statistics: “An injury is defined as any intentional or unintentional wound or damage to the body resulting from acute exposure to energy, such as heat, electricity, or kinetic energy from a crash, or from the absence of such essentials as heat or oxygen caused by a specific event, incident, or series of events within a single workday or shift.” This definition is available to anyone at the Web page of the Census of Fatal Occupational Injuries, our referenced source of data.2

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Intraoperative Photodynamic Therapy After Pleuropneumonectomy for Malignant Pleural Mesothelioma

To the Editor:

We read with great interest the article by Schouwink et al (October 2001)1 about intraoperative photodynamic therapy after pleuropneumonectomy for the treatment of patients with pleural mesothelioma. In the series by Sugarbaker et al,2 pleuropneumonectomy has a low postoperative mortality rate (3.8%) and relatively satisfying long-term results. Their technique involves opening the pericardial cavity and resecting the diaphragm while preserving the peritoneum. However, mesothelioma is one of the most rapidly disseminating tumors. As recommended by Schouwink et al,3 it would seem preferable not to open the pericardium, as we were able to do in the five most recent pleuropneumonectomies that we have performed for the treatment of patients with mesothelioma. Similarly, it is often possible to leave diaphragmatic muscle and fibers in place in order to avoid tearing the peritoneum when detaching it. The high rate of peritoneal recurrences following pleuropneumonectomy reported by Baldini et al (26%)3 and Rusch et al (31%)3 may be due to seeding by transdiaphragmatic invasion before surgery or to peroperative tearing of the peritoneum or to secondary peritoneal necrosis.

To be sure, adjunct local treatment is essential to prevent intracavitary recurrence, which is otherwise inescapable. Radiotherapy is effective in treating mesothelioma.4 However, the local recurrence rate remained high (35%) in a series of 49 patients who underwent surgery in Boston between 1987 and 1993.5 Radiation therapy, which was performed in only 35 of these patients, consisted of a median dose of 30.6 Gy to the hemithorax and a boost dose of 50 Gy to areas with gross residual disease or localized positive resection margins. Higher radiation doses of up to 54 Gy to the entire hemithorax appear to significantly reduce the local recurrence rate (13%) in the series reported by Rusch et al.4 To decrease the liver and intestinal toxicity associated with high radiation doses to the diaphragmatic sinus, the abdominal organs may be lowered by reconstructing a taut prosthetic diaphragms during surgery. However, radiation doses of > 50 Gy to the heart remain potentially toxic, in particular doses delivered to the left side of the heart, and intraoperative photodynamic therapy, as suggested by Schouwink et al,1 seems to be an interesting alternative.

I was fortunate to be invited to Amsterdam and to obtain light dosimetry equipment there. For large pleural cavities, the potential complications associated with the technique are due to a narrow anatomic zone that includes in particular the esophagus, the bronchial and vascular stumps, and the myocardium. These anatomic structures are located very close to the light source that illuminates the cavity during intraoperative photodynamic therapy. We have studied the fluence (at the wavelengths that react with meso-tetra(hydroxyphenyl) chlorine) emitted by the surgical theater lights during resection. Although our calculations are approximate, fluence may be as high as 5 J/cm2. We therefore decided to shield the esophagus, the bronchial and vascular stumps, and the pericardium. Conversely, the most difficult zone to illuminate was the pleural cul de sac. The diaphragm is lowered by running taut polyglycic acid sutures from one edge to the other, before illumination. Three patients received 0.15 mg/kg meso-tetra(hydroxyphenyl) chlorine and were operated on using these modified techniques.
while the cavity was illuminated with a 652-nm laser light and a fluence of 10 J/cm², except for the shielded zone. The large quantity of fluid drained postoperatively gave an indication of the effect of phototherapy on the pleural cavity walls. Slowing of esophageal motility was observed in all three cases.

Postoperative electrotherapy was performed in the first two patients on the thoracotomy scar and the pleural cul de sac. No recurrence was observed after 2½ years in one patient (as determined by follow-up CT scan) and after 26 months in the other patient (as determined by follow-up CT scan and negative thoracoscopy findings at 12 months). The third patient developed an infection of the chest wall, which was complicated by an infection of the pneumonectomy cavity. Radiation therapy was impossible to perform. Thoracostomy was performed 9 months later and revealed a late esophageal fistula involving the upper one third of the esophagus (in an unshielded zone). The fistula was closed with a muscle flap. No recurrence was observed in the pleural cavity. Unfortunately, the patient eventually died.

In our limited experience, high-dose preoperative phototherapy therefore appears capable of destroying tumor residues but seems to require major precautions, such as shielding of the incision and the mediastinal organs. Consequently, its place among other techniques seems limited if future series confirm the low local recurrence rate reported by the New York team with the adjunction of high-dose hemithoracic radiation therapy and if the toxicity associated with radiation therapy remains low.

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REFERENCES

To the Editor:

We thank Bonnette et al for the valuable comments on our study.1 In their reaction, they addressed the study of Sugarbaker et al,2 using a trimodality approach of extrapleural pneumonectomy combined with chemotherapy and radiotherapy and some aspects of the use of photodynamic therapy (PDT) after resection. In this study, the perioperative mortality is only 3.8% and the median survival is 19 months. Although the survival was not calculated on an intention-to-treat basis, results were better than what is generally achieved with the combination surgery and PDT.1,3,4 At least three factors may have been responsible for the difference in treatment outcome. Firstly, the combination surgery, chemotherapy, and radiotherapy may have a better antitumor activity, leading to better tumor control with acceptable toxicity. Secondly, the use of histologic assessment to direct radiotherapy to locations of irradical tumor resection seems an elegant way to treat those locations at risk more effectively. Finally, the use of MRI may have improved prediction of resectability, which is considered difficult by many investigators.

In the treatment protocol, with surgery and PDT used by Dr. Bonnette, which is comparable to ours, the esophagus, bronchial and vascular stumps, and pericardium were (partly) shielded from the laser light. This may have the advantage to avoid potential lethal complications (esophageal perforation, bronchial fistula, and myocardial infarction), which occurred in our study. However, organs shielded from light do not receive the additional PDT treatment, and may therefore be at risk for local tumor recurrence. In our opinion, the study of Bonnette et al is of particular importance because it can provide information on the risk of local recurrences.

Improvement of many issues of PDT in combination with surgery, such as patient selection and illumination of the diaphragmatic gutter, still seems possible.1,5 These improvements may better determine the exact place and indication of PDT-mediated therapy in malignant pleural mesothelioma.

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End-of-Life Care: Data Supportive?

To the Editor:

I read with interest the article on ethics in end-of-life care by Kelly et al in CHEST (March 2002).1 Their objective was to