

TABLE VI-7.—STUDIES RELATING TO CARDIOVASCULAR AND CARDIOPULMONARY EFFECTS, 2000–2002

Authors, Year	Description	Key Results
Lippmann <i>et al.</i> , 2000 .....	Day-to-day fluctuations in particulate air pollution in the Detroit area were compared with corresponding fluctuations in daily deaths and hospital admissions for 1985–1990 and 1992–1994.	After adjustment for the presence of other pollutants, significant associations were found between particulate levels and an increased risk of death due to circulatory causes. However, relative risks were about the same for PM <sub>2.5</sub> and larger particles.
Magari <i>et al.</i> , 2001 .....	Longitudinal study of a male occupational cohort examined the relationship between PM <sub>2.5</sub> exposure and cardiac autonomic function.	After adjusting for potential confounding factors such as age, time of day, and urinary nicotine level, PM <sub>2.5</sub> exposure was significantly associated with disturbances in cardiac autonomic function.
Pope <i>et al.</i> , 2002 .....	Prospective cohort mortality study, based on data collected for Cancer Prevention II study, which began in 1982. Questionnaires were used to obtain individual risk factor data (age, sex, race, weight, height, smoking history, education, marital status, diet, alcohol confounders, and occupational exposures). For about 500,000 adults, these were combined with air pollution data for metropolitan areas throughout the United States and with vital status and cause of death data through 1998.	After adjustment for other risk factors potential using a variety of statistical consumption, and methods, fine particulate (PM <sub>2.5</sub> ) exposures were significantly associated with cardiopulmonary mortality (and also with lung cancer). Each 10-μg/m <sup>3</sup> increase in mean level of ambient fine particulate air pollution was associated with an increase of approximately 6 percent in the risk of cardiopulmonary mortality.
Samet <i>et al.</i> , 2000a, 2000b .....	Time series analyses were conducted on data from the 20 and 90 largest U.S. cities to investigate relationships between PM <sub>10</sub> and other pollutants and daily mortality.	Results of both the 20-city and 90-city mortality analyses are consistent with an average increase in cardiovascular and cardiopulmonary deaths of more than 0.5% for every 10 μg/m <sup>3</sup> increase in PM <sub>10</sub> measured the day before death.
Wichmann <i>et al.</i> , 2000 .....	Time series analyses were conducted on data from Erfurt, Germany to investigate relationships between the number and mass concentrations of ultrafine and fine particles and daily mortality.	Higher levels of both fine and ultrafine particle concentrations were significantly associated with increased mortality rate.

TABLE VII-8.—STUDIES AND REVIEW OF ARTICLE ON CANCER EFFECTS, 2000–2002

Authors, year	Description	Key results
Boffetta <i>et al.</i> , 2001 .....	Cohort studied was entire Swedish working population (other than farmers). Job title and industry were classified according to probability and intensity of diesel exhaust exposure for years 1960 and 1970, and according to authors' confidence in assessment. Cohort members followed up for mortality for 19-year period from 1971 through 1989. Cause of death, specific cancer type, when applicable, obtained through national registries.	Relative risks (RR) of lung cancer among men were 0.95, 1.1, and 1.3 for job categories with low, medium, and high exposure to diesel exhaust compared to workers in jobs classified as having no occupational exposure. Elevated risks for medium and high exposure groups were statistically significant, and no similar pattern was observed for other cancer types.
Gustavsson <i>et al.</i> , 2000 .....	Case-control study involving all 1,042 male cases of lung cancer and 2,364 randomly selected controls (matched by age and inclusion year) in Stockholm County, Sweden from 1985 through 1990. Occupational exposure, smoking habits, and other risk factors assessed based on written questionnaires mailed to subjects or next of kin. Relative Risk (RR) estimates adjusted for age, selection year, tobacco smoking, residential radon, occupational exposures to asbestos and combustion products, and environmental exposure to NO <sub>2</sub> .	Adjusted RR for the highest quartile of estimated lifetime exposure was 1.63, compared to the group with no exposure.
Pope <i>et al.</i> , 2002 .....	Prospective cohort lung cancer mortality study using data collected for the American Cancer Society Cancer Prevention II Study (began 1982). Questionnaires used to obtain individual risk factor data including age, sex, race, weight, height, smoking history, education, marital status, diet, alcohol consumption, and occupational exposures. This risk factor data combined with air pollution data for metropolitan areas throughout United States and vital status and cause of death data through 1998 for about 500,000 adults.	After adjusting for other risk factors and potential confounders, chronic PM <sub>2.5</sub> exposures found to be significantly associated with elevated lung cancer mortality. Each 10 g/m <sup>3</sup> increase in mean level of ambient fine particulate air pollution associated with statistically significant increase of approximately 8 percent in risk of lung cancer mortality.