

## SUMMARY

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**Background:** CIMSTAR® 3800 is a metalworking fluid used as a lubricant and for cooling during the machining and grinding of aluminum and steel. Exposure to CIMSTAR 3800 occurs through skin contact and the inhalation of vapors in a variety of metalworking occupations and is associated with nonmalignant respiratory conditions such as asthma. The effects of inhalation exposure to CIMSTAR 3800 aerosols in male and female rats and mice were studied to identify potential toxicity or cancer-related outcomes.

**Methods:** Groups of 50 male and 50 female rats and mice were exposed to air containing aerosols of 10, 30, or 100 milligrams (mg) of CIMSTAR 3800 per cubic meter (m<sup>3</sup>) of air. Control animals were exposed to clean air in the same type of inhalation chambers (0 mg/m<sup>3</sup> CIMSTAR 3800). Animals were exposed for 6 hours per day, 5 days per week, for 2 years. Additional 3-month studies were conducted to set appropriate doses and identify target organs for subsequent studies. Tests were conducted to evaluate the potential for CIMSTAR 3800 to cause DNA damage. At the end of the study, tissues from more than 40 sites from every animal were examined for signs of disease.

**Results:** All animals exposed to CIMSTAR 3800 had increased incidences of noncancerous tissue abnormalities of the respiratory tract. There were increased incidences of neoplasms (which can include benign or malignant growths) of the skin in female rats and neoplasms of the thyroid gland and lung in female mice. Slightly increased incidences of neoplasms of the prostate gland in male rats and of neoplasms of the uterus in female rats were also observed. Tests to evaluate the potential for CIMSTAR 3800 to damage DNA produced inconclusive results.

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**Conclusions:** *The NTP four-point scale rates the level of evidence that a substance has the ability to cause cancer in laboratory animals. Under the conditions of these 2-year inhalation studies, there was some evidence that CIMSTAR 3800 exposure has the ability to cause thyroid cancer and lung cancer in female mice, equivocal (uncertain) evidence that it has the ability to cause prostate cancer in male rats and skin neoplasms and uterine cancer in female rats, and no evidence that it has the ability to cause cancer in male mice. In addition, CIMSTAR 3800 exposure caused increased incidences of noncancerous tissue abnormalities in the nose, larynx, and lung in male and female rats and mice; lymph nodes in male and female rats; and thyroid gland in female mice.*

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