

6-Nitrobenzimidazole

6-Nitrobenzimidazole is a heterocyclic nitro-aromatic compound used as an anti-fogging agent in photographic developing solutions. Workers in the chemical industry and persons handling photographic chemicals containing this compound may be exposed.

6-Nitrobenzimidazole passed the animal data screen, underwent a preliminary toxicological evaluation, and is being brought to the Carcinogen Identification Committee for consultation. This is a compilation of the relevant studies identified during the preliminary toxicological evaluation.

Epidemiological data

No cancer epidemiology studies were identified.

Animal carcinogenicity data

- Long-term feeding studies in rats
 - 78-week exposure and additional 29-week observation in male and female Fischer 344 rats: NCI (1979)
 - *No treatment-related tumor findings in males or females*
- Long-term feeding studies in mice
 - 78-week exposure and additional 18-week observation in male and female B6C3F₁ mice: NCI (1979)
 - *Increase in hepatocellular carcinoma and hepatocellular adenoma and carcinoma (combined) in males and females (by pairwise comparison)*
 - *NCI noted that “the starting of high and low dose groups of ... mice several months apart prevented direct evaluation of dose-related effects”*

Other relevant data

- Genotoxicity
 - Mutagenicity in *S. typhimurium* (positive): Dunkel *et al.* (1985)
 - Mutagenicity in *E. coli* (negative): Dunkel *et al.* (1985)
- Structure activity considerations
 - Other imidazole compounds listed as carcinogens under Proposition 65 include
 - Metronidazole (a nitroimidazole)
 - Glu-P-1 (2-Amino-6-methyldipyrido[1,2- a:3',2'-d]imidazole)
 - Glu-P-2 (2-Aminodipyrido[1,2-a:3',2'-d]imidazole)
 - 4-Methylimidazole

References¹

Dunkel, VC, Zeiger, E, Brusick, D, McCoy, E, McGregor, D, Mortelmans, K, Rosenkranz, HS, Simmon, VF (1985). Reproducibility of microbial mutagenicity assays:II testing of carcinogens and noncarcinogens in *Salmonella typhimurium* and *Escherischia coli*. *Environ. Mol. Mutagen*, **7**(suppl. 5):1-248.

National Cancer Institute (NCI, 1979). *Bioassay of 6-nitrobenzimidazole for possible carcinogenicity*. Technical Report Series No. 117, U.S. Department of Health, Education, and Welfare, Public Health Service, National Institute of Health. National Cancer Institute, DHEW Publication No. (NIH) 79-1372.

¹ Excerpts or the complete publication have been provided to members of the Carcinogen Identification Committee, in the order in which they are discussed in this document.