

N-Nitrosoanabasine

N-Nitrosoanabasine [N-nitroso-2-(2'-pyridyl)piperidine] is a nitrosamine that is a component of tobacco smoke. It is never synthesized deliberately for producing industrial or consumer products. Exposure would be to smokers and those exposed by second-hand smoke.

N-Nitrosoanabasine 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

- Drinking water studies
 - Chester Beatty (CB) albino male and female rats (six days per week, for life): Boyland *et al.* (1964)
- Subcutaneous injection studies
 - Syrian golden male and female hamsters (three times per week for 25 weeks + 58 weeks observation): Hilfrich *et al.* (1977)

Other relevant data

- Genotoxicity
 - *Salmonella* mutagenicity studies: Kamataki *et al.* (2002)
- Structure activity considerations:
 - More than 20 nitrosamines are listed under Proposition 65 as carcinogens, including N-nitrosopiperidine and N-nitrososornicotine.

References¹

Boyland E, Roe FJC, Gorrod JW and Mitchley CV (1964). The carcinogenicity of Nitrosoanabasine, a possible constituent of tobacco smoke. *Brit J Cancer* **18**(2):265-270.

¹ Copies of these listed references, as either the abstract, the relevant sections of the publication, or the complete publication, have been provided to members of the Carcinogen Identification Committee. These references have been provided in the order in which they are discussed in this document.

Hilfrich J, Hecht SS, Hoffmann D (1977). A study of tobacco carcinogenesis. XV. Effects of N-Nitrosornicotine and N-Nitrosoanabasine in Syrian Golden Hamsters. *Cancer Lett* **2**:169-176.

Kamataki T, Fujita K, Nakayama K, Yamazaki Y, Miyamoto M, Ariyoshi N (2002). Role of human cytochrome P450 (CYP) in the metabolic activation of nitrosamine derivatives: application of genetically engineered Salmonella expressing human CYP. *Drug Metab Rev* **34**(3):667-676.