

IARC MONOGRAPHS



**SOME NITROBENZENES
AND OTHER INDUSTRIAL
CHEMICALS**

VOLUME 123

**IARC MONOGRAPHS
ON THE EVALUATION
OF CARCINOGENIC RISKS
TO HUMANS**

International Agency for Research on Cancer





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This publication represents the views and expert opinions of an IARC Working Group on the Evaluation of Carcinogenic Risks to Humans, which met in Lyon, 9–16 October 2018

LYON, FRANCE - 2020

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In 1969, the International Agency for Research on Cancer (IARC) initiated a programme on the evaluation of the carcinogenic risk of chemicals to humans involving the production of critically evaluated monographs on individual chemicals. The programme was subsequently expanded to include evaluations of carcinogenic risks associated with exposures to complex mixtures, lifestyle factors and biological and physical agents, as well as those in specific occupations. The objective of the programme is to elaborate and publish in the form of monographs critical reviews of data on carcinogenicity for agents to which humans are known to be exposed and on specific exposure situations; to evaluate these data in terms of human risk with the help of international working groups of experts in carcinogenesis and related fields; and to indicate where additional research efforts are needed. The lists of IARC evaluations are regularly updated and are available on the Internet at <http://monographs.iarc.fr/>.

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This volume of the *IARC Monographs* provides evaluations of the carcinogenicity of *ortho*-phenylenediamine dihydrochloride and its parent compound *ortho*-phenylenediamine, 2- and 4-chloronitrobenzene, 1,4-dichloro-2-nitrobenzene and 2,4-dichloro-1-nitrobenzene, 2-amino-4-chlorophenol, *para*-nitroanisole, and *N,N*-dimethylacetamide.

ortho-Phenylenediamine dihydrochloride is used in the manufacture of dyes, coatings, and photographic chemicals, while *ortho*-phenylenediamine is used in the production of pharmaceuticals and agrochemicals, and in dyes and pigments for colouring hair and furs. 2-Chloronitrobenzene is used to make colorants and various other chemicals. 4-Chloronitrobenzene is a chemical that is used in the production of agricultural chemicals, pharmaceuticals, paints, pigments, colorants, plastics, and paper, and in the treatment of textiles and leather. 1,4-Dichloro-2-nitrobenzene and 2,4-dichloro-1-nitrobenzene are intermediates in the manufacture of diazo pigments, agrochemicals, ultraviolet absorbents, and pharmaceuticals. 2-Amino-4-chlorophenol is a chemical used in the manufacture of pharmaceuticals and of dyes for textiles and other consumer products. *para*-Nitroanisole is used to make synthetic dyes used for cosmetics and other consumer products. Finally, *N,N*-dimethylacetamide is used in the manufacture of textile fibres, agrochemicals, pharmaceuticals, fine chemicals, coatings and films, and as a solvent for resins.

Exposure to all the agents considered may occur in different occupational settings and in the general population.

The *IARC Monographs Working Group* reviewed epidemiological evidence, animal bioassays, and mechanistic and other relevant data to reach conclusions as to the carcinogenic hazard to humans of environmental or occupational exposure to these agents.

