

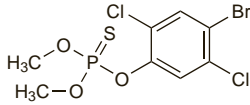
Bromophos

Bromofós; Bromofos; OMS-658. *O*-4-Bromo-2,5-dichlorophenyl *O,O*-dimethyl phosphorothioate.

$C_8H_8BrCl_2O_3PS = 366.0$.

CAS — 2104-96-3.

ATC Vet — QP53AF11.

**Profile**

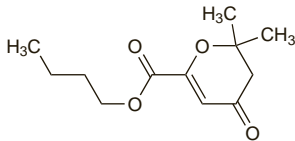
Bromophos is an organophosphorus insecticide (p.2047) used in veterinary practice for the control of ectoparasites in the environment. It has also been used as an agricultural insecticide.

Butoxyronoxyl

Butopiroxinilo; Indalone. Butyl 3,4-dihydro-2,2-dimethyl-4-oxo-2H-pyran-6-carboxylate.

$C_{12}H_{18}O_4 = 226.3$.

CAS — 532-34-3.

**Profile**

Butoxyronoxyl has been used as an insect repellent.

Carbamate Insecticides

Insecticidas del grupo de los carbamatos.

Description. The carbamate insecticides are *N*-substituted esters of carbamic acid.

◇ References.

- WHO. Carbamate pesticides: a general introduction. *Environmental Health Criteria 64*. Geneva: WHO, 1986. Available at: <http://www.inchem.org/documents/ehc/ehc/ehc64.htm> (accessed 24/07/08)

Adverse Effects

As for Organophosphorus Insecticides, p.2047.

The carbamates are cholinesterase inhibitors, differing from the organophosphorus insecticides in that the inhibition they produce is generally less intense and more rapidly reversible. In addition, they do not appear to enter the CNS as readily and severe central effects are therefore uncommon.

Treatment of Adverse Effects

If substantial amounts of carbamate insecticides have been ingested the use of gastric lavage should be considered if the patient presents within 1 hour. Contaminated clothing should be removed and the skin washed with soap and water. Treatment is largely symptomatic and supportive and includes atropine, but this may not always be necessary due to the rapidly reversible nature of the cholinesterase inhibition produced. Pralidoxime is thought to be generally unnecessary; some *animal* studies have suggested that it may increase the toxicity of carbamates.

◇ References.

- WHO. Safe use of pesticides: fourteenth report of the WHO expert committee on vector biology and control. *WHO Tech Rep Ser 813*. 1991. Available at: http://libdoc.who.int/trs/WHO_TRS_813.pdf (accessed 21/07/08)
- Proudfoot A, ed. *Pesticide poisoning: notes for the guidance of medical practitioners*. 2nd ed. London: DoH, The Stationery Office, 1996.

Carbaryl (BAN)

Carbaril (*pi*INN); Carbarilo; Carbarilum; Karbaril; OMS-29. 1-Naphthyl methylcarbamate.

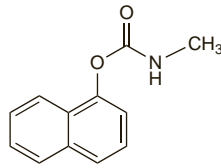
Карбарил

$C_{12}H_{11}NO_2 = 201.2$.

CAS — 63-25-2.

ATC Vet — QP53AE01.

The symbol † denotes a preparation no longer actively marketed

**Pharmacopoeias.** In *Br*.

BP 2008 (Carbaryl). A white to off-white or light grey powder which darkens on exposure to light. Very slightly soluble in water; soluble in alcohol and in acetone. Store at a temperature not exceeding 25°. Protect from light.

Adverse Effects and Treatment

As for Carbamate Insecticides, above. Carbaryl may be absorbed after ingestion, inhalation, or skin contamination.

Carbaryl has been reported to produce neoplasms in *mice* and *rats* and in late 1995 the UK DoH advised that it would be prudent to consider carbaryl as a potential human carcinogen; its medicinal use was limited to prescription only. However, the DoH emphasised that the risk was a theoretical one and that any risk from the intermittent use of head lice preparations was likely to be very small.

Uses and Administration

Carbaryl is a carbamate insecticide (above). It is used as a 0.5 or 1.0% lotion or shampoo in the treatment of head and pubic pediculosis (p.2034). Lotions are generally preferred to shampoos as the contact time is longer. Aqueous lotions are preferred to treat pubic lice because alcoholic lotions are irritant to excoriated skin and the genitalia; aqueous lotions may also be preferable in asthmatic subjects or children to avoid alcoholic fumes. Skin or hair treated with an alcohol-based preparation should be allowed to dry naturally.

Carbaryl is also used as a topical ectoparasiticide in veterinary practice and as an agricultural, horticultural, and household insecticide.

◇ References.

- WHO. Carbaryl health and safety guide. *IPCS Health and Safety Guide 78*. Geneva: WHO, 1993. Available at: http://www.inchem.org/documents/hsg/hsg/hsg78_e.htm (accessed 23/04/04)
- WHO. Carbaryl. *Environmental Health Criteria 153*. Geneva: WHO, 1994. Available at: <http://www.inchem.org/documents/ehc/ehc/ehc153.htm> (accessed 23/04/04)

Preparations

BP 2008: Carbaryl Lotion.

Proprietary Preparations (details are given in Part 3)

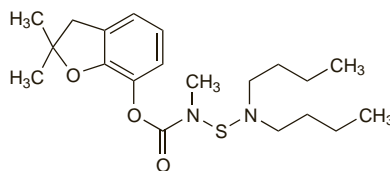
Israel: Haifi; **UK:** Carylderm.

Carbosulfan

Carbosulfán. 2,3-Dihydro-2,2-dimethylbenzofuran-7-yl (dibutylaminothio)methylcarbamate.

$C_{20}H_{32}N_2O_3S = 380.5$.

CAS — 55285-14-8.

**Profile**

Carbosulfan is a carbamate insecticide (p.2037) used in agriculture and for the larvicidal treatment of rivers in the control of onchocerciasis (p.137).

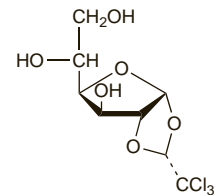
Chloralose (rINN)

Alphachloralose; Chloralosane; α -Chloralose; Chloralosum; Cloralosa; Glucochloral. (*R*)-1,2-*O*-(2,2,2-Trichloroethylidene)- α -D-glucofuranose.

Хлоралоза

$C_8H_{11}Cl_3O_6 = 309.5$.

CAS — 15879-93-3.

**Profile**

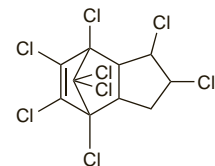
Chloralose has general properties similar to those of cloral hydrate (p.979), of which it is a derivative. It is used as a rodenticide. It was formerly used for its hypnotic properties.

Chlordane

Chlordan; Clordano. 1,2,4,5,6,7,8,8-Octachloro-2,3,3a,4,7,7a-hexahydro-4,7-methanoindene.

$C_{10}H_6Cl_8 = 409.8$.

CAS — 57-74-9.

**Profile**

Chlordane is a chlorinated insecticide (p.2037). Its use is limited, or even prohibited, in some countries because of toxicity due to its persistent nature.

◇ References.

- Kutz FW, et al. A fatal chlordane poisoning. *J Toxicol Clin Toxicol* 1983; **20**: 167-74.
- Olanoff LS, et al. Acute chlordane intoxication. *J Toxicol Clin Toxicol* 1983; **20**: 291-306.
- WHO. Chlordane. *Environmental Health Criteria 34*. Geneva: WHO, 1984. Available at: <http://www.inchem.org/documents/ehc/ehc/ehc34.htm> (accessed 23/04/04)
- WHO. Chlordane health and safety guide. *IPCS Health and Safety Guide 13*. Geneva: WHO, 1988. Available at: <http://www.inchem.org/documents/hsg/hsg/hsg013.htm> (accessed 23/04/04)

Chlorinated Insecticides

Insecticidas clorados.

Adverse Effects

Chlorinated or organochlorine insecticides form a very wide group and the toxicity of individual members varies considerably. In general these insecticides produce symptoms consistent with CNS stimulation. They may be absorbed through the respiratory and gastrointestinal tracts and through the skin.

Symptoms of acute poisoning include nausea and vomiting, paraesthesia, giddiness, tremors, convulsions, coma, and respiratory failure. Liver, kidney, and myocardial toxicity have been reported. Effects on the blood include agranulocytosis and aplastic anaemia. Symptoms may be complicated by the effects of the solvent.

Chlorinated insecticides have been reported to enhance microsomal hepatic enzyme activity. Skin reactions can occur after contact.

Polychlorinated biphenyl (PCB) and terphenyl compounds were formerly used as insecticides in many countries. They accumulate in body fat and are not readily excreted, although they are distributed into breast milk and possibly cross the placenta; because of this and because of accidental contamination they remain a cause for concern. The related polybrominated biphenyl compounds (PBB), which have no insecticidal uses, have also been absorbed by humans after accidental contamination of the food chain.

Some chlorinated insecticides have weak oestrogenic effects; it has been proposed that exposure may increase the risk of breast cancer.

Treatment of Adverse Effects

If chlorinated insecticides have been ingested gastric lavage or activated charcoal may be considered if the patient presents within 1 hour. Contaminated clothing should be removed and the skin washed with soap and water. Treatment is largely symptomatic