A PANAP Factsheet Series
Highly Hazardous Pesticides
Mancozeb

**Uses:** dithiocarbamate fungicide; contains zinc, manganese (essential element but neurotoxic in excess); metabolites include ETU.

**Residues:** drinking water, food; manganese in hair of exposed pregnant women.¹

**Acute toxicity:** eye irritation, skin rashes, dermatitis, nausea, dizziness.² Children have been poisoned in Nicaragua.³ Commonly reported cause of poisoning in Tanzania.⁴

**Chronic toxicity:** liver, brain, kidney (rats).⁵

**Neurological:** damage to peripheral nerves with abnormal gait and loss of muscle mass (rats);² prenatal exposure alters developing brain (mice);⁶ in other species neurodegeneration and behavioural changes.⁷ ⁸ Associated with Parkinson’s disease.⁹⁻¹¹

**Cancer:** US EPA probable human carcinogen; in rats tumours of thyroid, liver, pituitary;² mammary glands, ear, pancreas, bones of the head;¹² in mice foetal cells¹³ and skin.¹⁴ Associated with leukaemia,¹⁵ melanoma,¹⁶ breast cancer risk.¹⁷

**Endocrine disruption:** causes thyroid damage, tumours and altered hormones;² associated with hypothyroidism and hyperthyroidism in women;¹⁹ anti-androgenic.²⁰

**Reproduction:**
Ovarian toxicant.²¹ ²² Birth defects e.g. hydrocephaly, skeletal system defects in rats;² tumours and neural tube defects in humans.²³ Reduced female fertility (mice).²¹ Induces a pre-malignant state in ovarian follicles;¹³ ²² increased length of menstrual cycle, missed periods.²⁴

**Immune:** alters immune system response,²⁵⁻²⁷ allergic sensitisation.²

**Environmental effects:**
Aquatic: very highly toxic to fish and aquatic invertebrates; risk to freshwater fish and invertebrates; fish kills.²

Terrestrial: chronic risks to birds and mammals, including reproductive and potential endocrine disruption; toxic to some beneficial insects.² ²⁸

**Environmental fate:**
Can cause severe accumulation of manganese in soil, and ETU in surface water.²⁹

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**Hazard to children:** birth defects; developmental, immune and endocrine effects; later in life: cancer, Parkinson’s disease, female reproductive problems.
References


