

Toxicity and Health Impacts of Cannabis Contaminants

SOLVENTS	
Analyte	Effects
Acetone	Short term in high amounts cause headaches, nausea, and blood cell changes. Long term exposure can cause kidney, liver, and nerve damage.
Acetonitrile	Inhalation exposure causes moderate effects. Long term impacts cause cyanide poisoning, as cyanide is released after metabolism of acetonitrile.
Butanes	Central nervous system (CNS) and cardiac effects. Impact tends to be low.
Ethanol	Cognitive issues with acute and chronic exposure.
Ethyl Acetate	Cellular irritation in mucous membranes.
Ethyl Ether	Long term exposure can affect impairment and be habit forming.
Heptane	Dizziness, stupor, incoordination; loss of appetite, nausea; dermatitis; chemical pneumonitis (aspiration liquid); and unconsciousness.
Hexane (NEUROTOXIN)	Acute inhalation exposure in high levels causes mild CNS effects, including dizziness, giddiness, slight nausea, and headache. Chronic exposure in air is associated with polyneuropathy with numbness in the extremities, muscular weakness, blurred vision, headache, and fatigue observed. Neurotoxic effects have also been exhibited in rats.
Isopropyl Alcohol	Irritation of mucous membranes, especially if inhaled in high concentrations.
Methanol (NEUROTOXIN)	Chronic exposure may cause CNS birth defects. Chronic poisoning from repeated exposure to methanol vapor may produce inflammation of the eye (conjunctivitis), recurrent headaches, giddiness, insomnia, stomach disturbances, and visual failure.
Pentane	Irritation of mucous membranes.
Propane	Respiratory inflammation in high levels.
Toluene (NEUROTOXIN)	Can cause eye and nose irritation, tiredness, confusion, euphoria, dizziness, headache, dilated pupils, tears, anxiety, muscle fatigue, insomnia, nerve damage, inflammation of the skin, and liver and kidney damage. Long term exposure can be serious.
Xylenes	Short term exposure toxicity is unknown. Long term exposure includes CNS effects (headache, dizziness, ataxia, drowsiness, excitement, tremor, and coma), ventricular arrhythmias, acute pulmonary edema, respiratory depression, nausea, vomiting, and reversible hepatic impairment.
Dichloroethane	Irritation, especially of lungs. Chronic exposure can be serious. Potential carcinogen.
Benzene (CARCINOGEN)	Exposure at high levels can cause death and have neurological effects. Leukemia and cancers in blood forming organs with long term exposure.
Chloroform	Toxic if inhaled and potential carcinogen.
Ethylene Oxide (REPRODUCTIVE HAZARD)	Cancer risk in long term, low-level exposure. Acute exposure causes irritation.
Methylene chloride (REPRODUCTIVE HAZARD)	Neurotoxin especially with prolonged exposure.
Trichloroethylene (CARCINOGEN)	Inhalation or ingestion can produce CNS effects including headache, dizziness, lack of coordination, stupor, and coma. Respiratory depression or cardiac dysrhythmia from high-level exposures can result in death. Other effects of acute exposure include hypotension, nausea, vomiting, and diarrhea.

HEAVY METALS	
Arsenic (CARCINOGEN)	Arsenic can be harmful to the eyes, skin, liver, kidneys, lungs, and lymphatic system. Can also cause cancer and have acute and long term effects.
Cadmium (CARCINOGEN)	High levels of inhalation damages people's lungs and can cause death. Exposure to low levels in air, food, water, and particularly in tobacco smoke over time may build up cadmium in the kidneys and cause kidney disease and fragile bones.
Lead	Particularly harmful for children as it stunts brain development. Can cause high blood pressure and brain, kidney, and reproductive health issues in adults. Symptoms of lead poisoning include headaches, stomach cramps, constipation, muscle/joint pain, trouble sleeping, fatigue, irritability, and loss of sex drive.
Mercury (NEUROTOXIN)	Neurotoxin that can cause CNS problems, among many symptoms.
OTHER ANALYTES	
E. coli	Each year in the United States, <i>E. coli</i> infections cause approximately 265,000 illnesses and about 100 deaths.
Enterobacteriaceae	Antibiotic resistant bacteria that kills hundreds annually. Particularly risky to those with suppressed immune systems. Enterobacteriaceae has over 13,000 infections annually.
Mycotoxins	Byproducts of fungus and may cause different types of poisoning and, consequently, diverse health problems (from acute to chronic problems) in both animals and humans. Long term exposure can cause immune suppression. Multiple mycotoxins are carcinogens.
Salmonella	CDC estimates <i>Salmonella</i> bacteria cause about 1.35 million infections, 26,500 hospitalizations, and 420 deaths in the United States every year.
PESTICIDES	
<i>This list includes pesticides that have been detected either in the adult use program or in the medical audit testing</i>	
Abamectin	Patients may initially present with nausea, vomiting, salivation, diarrhea and dizziness. More severe manifestations may include aspiration pneumonia, respiratory failure, hypotension and coma.
Bifentazate	Irritant of eyes and skin, respiratory tract. May cause allergic skin reaction.
Bifenthrin	Harmful if inhaled, causes acute inhalation toxicity. May cause allergic skin reaction.
Cypermethrin	Banned pesticide. Suspected of damaging fertility.
Dichlorvos	Banned pesticide. May be fatal if it is absorbed through the eye or skin, is ingested or inhaled. May produce acute cholinesterase depression, symptoms of which include headache, nausea, vomiting, diarrhea, abdominal cramps, excessive sweating, salivation and tearing, constricted pupils, blurred vision, tightness in chest, weakness, muscle twitching and confusion; in extreme cases, unconsciousness, convulsions, severe respiratory depression and death may occur. Possible carcinogen.
Etoxazole	Irritant of eyes and skin. Minimally toxic when ingested or inhaled. High doses can cause lethargy, vomiting, decreased respiratory rate, reduced food consumption.
Fludioxonil	May cause allergic skin reaction.
Imazalil	Harmful if inhaled, toxic if swallowed. Causes serious eye damage and suspected of causing cancer.
Imidacloprid	Toxic if swallowed.
Malathion	Acute oral toxicity, skin sensitizer (causes allergic contact dermatitis).
Metalaxyl	Acute oral toxicity, skin sensitizer (causes allergic contact dermatitis).

Methyl parathion	Fatal if swallowed or inhaled. Toxic in contact with skin. Causes eye irritation. May cause damage to organs through prolonged or repeated exposure.
Myclobutanil	Harmful if swallowed. Causes serious eye irritation. Suspected of damaging fertility or the unborn child. Also releases cyanide upon combustion. <u>Cyanide Inhalation:</u> <ul style="list-style-type: none"> • Mild to moderate: CNS effects: headache, confusion, anxiety, dizziness, weakness (malaise), and loss of consciousness. Cardiovascular effects: palpitations. Respiratory effects: respiratory tract irritation, difficulty breathing or shortness of breath (dyspnea), and transient increase in the rate and depth of breathing (hyperpnea). Gastrointestinal effects: nausea and vomiting (emesis). • Severe: CNS effects: coma, seizures, and dilated pupils (mydriasis). Cardiovascular effects: shock, abnormal or disordered heart rhythms (dysrhythmias), critically low blood pressure, and cardiac arrest. Respiratory effects: abnormally rapid, followed by abnormally slow respirations; accumulation of fluid in the lungs (pulmonary edema); and respiratory arrest. Eye effects: dilated pupils, inflammation of the surface of the eye, and temporary blindness.
Permethrin	Harmful if swallowed or inhaled. May cause an allergic skin reaction.
Piperonylbutoxide	Very toxic to aquatic life with long lasting effects.
Propiconazole	Harmful if swallowed. May cause an allergic skin reaction. May damage fertility or the unborn child.
Pyrethrins	Toxic if swallowed, in contact with skin or if inhaled. May cause an allergic skin reaction. Suspected of damaging fertility or the unborn child. May cause damage to organs through prolonged or repeated exposure.
Spinosad	Very toxic to aquatic life with long lasting effects.
Spiromesifen	May cause an allergic skin reaction.