Johnson Controls, Whitmore Lake

Chemical Emissions

The following is a list of chemicals which Johnson Controls has now reported emitting into the air (data from the Title III Toxic Release Inventory, Department of Natural Resources) :

1990	
Methylene chloride (Dichloromethane)	1,434,937 lbs/yr
Toluene diisocyanate (Mixed isomers)	34 lbs/yr
Total releases to the air	1,434,971 lbs/yr
1989	
Methylene chloride (Dichloromethane)	1,150,713 lbs/yr
Toluene diisocyanate (2,4 and 2,6)	25 lbs/yr
Total releases to the air	1,150,738 lbs/yr

How Johnson Controls compares to other polluters (data from the Toxic Release Inventory, Natural Resources Defense Council, & EPA)

For methylene chloride emissions:

•Johnson Controls was the second largest emitter of methylene chloride in the state (1988)

•Johnson Controls is third in the entire Great Lakes Basin in methylene chloride emissions (1988)

•Johnson Controls was the 16th largest emitter of methylene chloride in the nation (1987--they are likely higher in subsequent years)

For overall air emissions:

•Johnson Controls is the second largest air emitter in Washtenaw County behind Ford-Saline Instruments & Plastics (1989)

•Johnson Controls is the nineteenth largest total air emitter in the state (1989)

Johnson Controls Other Reporting

Johnson Controls does not list any emissions to water, land, underground injection or off-site transfer on the filed Title III forms.

Johnson Controls Air Permit #'s are: 783-81, 357-88
Johnson Controls NPDES Permit # is: MI0003212

Chemical Effects

Toluene diisocyanate (TDI) - In high doses can cause congestion, shortness of breath, other lung ailments. Repeated low-scale exposure to TDI can sensitize a person to the chemical, ie. exposure can make you allergic to it. It can also cause chemical worker's lung.

TDI is capable of stimulating antibody production and producing symptoms of allergy.

Two kinds of TDI are reported being used at the Johnson Controls plant.

Toluene 2,4 diisocyanate is a carcinogen of the pancreas, liver and breast in animals. It may cause temporary impotence in males. Repeated exposure to levels too low to cause irritation can cause gradual but permanent loss of lung function. Overexposed persons may suffer poor memory and/or concentration after exposure stops. This condition may or may not be permanent.

Toluene 2,4 diisocyanate is poisonous by ingestion, inhalation, and intravenous routes. The vapor can irritate the eyes, nose and throat and cause cough, chest tightness, headaches and shortness of breath. Can cause build up of fluid in lungs, which can be fatal. Can cause lung allergy, permanent lung damage or eye damage. (repeated exposure). Contact with skin may cause allergic eczema. It is very corrosive to eyes.

When heated to decomposition it emits highly toxic fumes of NO_x. TDI (2,4) is combustible when exposed to heat and flame.

Toluene 2,6 diisocyante is a suspected carcinogen. It is poisonous by ingestion and inhalation. Acute and chronic exposures to low concentrations may produce asthmatic attacks. It is a powerful irritant of the eyes, skin and respiratory tract. Tightness in the chest, coughing, shortness of breath and labored breathing have been reported upon inhalation of low concentrations.

When heated to decomposition, it emits toxic fumes of NOx

Methylene Chloride, or Dichloromethane is a possible carcinogen. New evidence from National Toxics Program shows cancer in lab animals when inhaled at levels only a small factor higher than those permitted by current OSHA standard.
It is an experimental reproductive toxin, it may irritate the lungs, it may damage the liver, and damage the brain, causing memory loss, poor coordination, or reduced thinking ability. Carbon monoxide is formed during use, so long-term exposure may cause effects on the nervous system related to chronic oxygen deprivation.
Repeated skin contact can cause thickening and cracking of the skin. It is an experimental teratogen.

Methylene chloride is poisonous by intravenous route. Ingestion and inhalation can cause paresthesia, somnolence, altered sleep time, convulsions, euphoria, and change in cardiac rate. Contact can cause skin irritation. Liquid may irritate eyes on contact. Breathing vapor may irritate the nose, throat, and lungs, causing coughing and/or shortness of breath.
High exposures can lead to pulmonary edema, a build up of fluid in the lungs, which is an emergency.

High concentrations can lead to unconsciousness and death. Low concentrations can cause headaches, fatigue, unsteadiness and "drunk" behavior. Exposure can decrease the blood's ability to

carry oxygen, causing fatigue, shortness of breath, heart pain. Exposure can cause the heart to beat irregularly or stop.

When heated to decomposition it emits hightly toxic fumes of phosgene and Cl-.

Diethanolamine has not been tested for carcinogenic or reproductive effects. It may cause skin and lung allergies, in addition to brain or other nerve damage with repeated exposure. Possible effects of exposure include reduced memory and concentration, personality changes, fatigue, sleep disturbances, etc. Diethanolamine can irritate and burn the eyes and irritate the nose and throat.

(Sources: New Jersey Department of Health Hazardous Substance Fact Sheets, Hazardous Chemicals Desk Reference, Casarett and Doull's Toxicology, Clinical Toxicology of Commercial Products)

Chemical Use and Storage

The following chemicals are used at the Johnson Controls Plant (Data from Washtenaw County Right to Know Reporting Forms and the Title III Tier 1 and 2 reporting forms) *THIS IS NOT A COMPLETE LIST*

	1990 Washtenaw County Data		1990 Tier Reports
Propane	8,915,400	lbs/year	100,000-999,999 lbs avg/daily
Toluene 2,4 diisocyanate	2,633,612	lbs/yr	100,000-999,999 lbs avg/d
Methylene chloride	829,855	lbs/yr	10,000-99,999 lbs avg/d
Toluene 2,6 diisocyanate	658,403	lbs/yr	100,000-999,999 lbs avg/d
Mineral spirits	461,520	lbs/yr	1,000-9,999 lbs avg/d
Diethanolamine	122,196	lbs/yr	10,000-99,999 lbs avg/d
Silicone	55,560	lbs/yr	
Propylene glycol	37,520	lbs/yr	
Dipropylene glycol	37,520	lbs/yr	
Trade secret mixture	23,200	lbs/yr	
Hydrocarbon naptha	18,530	lbs/yr	
Triethylene diamine	18,480	lbs/yr	
Diphenylmethane diisocyanate	14,400	lbs/yr	1,000-9,999 lbs avg/d
MDI Polymer			1,000-9,999 lbs avg/d
Tertiary amine	12,000	lbs/yr	
1,1,1, trichloroethane	9,240	lbs/yr	
Acetone	3,162	lbs/yr	
Petroleum distolate	2,754	lbs/yr	
Sulfuric acid	1,968	lbs/yr	1,000-9,999 lbs avg/d
Morpholine	1,293	lbs/yr	
Diethylaminoethanol	1,293	lbs/yr	
Ammonia	1,293	lbs/yr	
Toluene	1,008	lbs/yr	
N-hexane	918	lbs/yr	
Benzene	360	lbs/yr	
Subtotal	13,861,485	lbs/yr	324,000-3,239,991 lbs avg/d

Others include acetylene, argon, 2,6,8 trimethyl-4 nonyloxypolyethylene oxyethanol, etc.