

### DANGERS FROM THE USE OF CHEMICAL TOILET TO THE HEALTH OF USER AND THE ENVIRONMENT

For the disinfection of the sewages the chemical toilet uses chemicals dissolved in water. 100 to 250 litres of those chemicals per toilet, depending on the model, are placed in the sewages tank. These chemicals should be changed daily, because in opposite case the toilet not only does not function but is not also accessible because of the odours. This means practically that each chemical toilet creates (produces) daily from 100 to 250 litres of waste overloading characteristically the natural environment. Furthermore they need special treatment in an industrial sewage treatment station. See: Material Safety Data Sheet

#### The chemical toilet constitutes danger for the health of user.

The chemicals that are used by the chemical toilets are usually aldehydes. Those chemicals are known as cancer-causing chemicals. See: Material Safety Data Sheet

#### The chemical toilet can cause explosion.

During the operation of the chemical toilet methane and hydrogen sulphide are produced. This gases are flammable and they can cause explosion in case where the user has already turned on cigarette or attempts to. Such accidents are known with human victims.

See

a) Power surge explodes 'superloo'

b) Material Safety Data Sheet

#### The chemical toilet has small duration of life.

The material of manufacture of the chemical toilet is plastic, which in duration of 2-3 years by the sun and the alternations of the temperature will be destroyed.

#### The chemical toilet is not sold but is rented.

Because of the need for daily maintenance, changing of the liquids, the chemical toilet usually is rented. Thus, the companies that rent those toilets, offer also the service. This however constitutes important restriction regarding their placement, because the chemical toilets should be near to the rent company.



Jul 15, 7:25 AM (ET)

Firefighters checked no one was inside and made the area safe

### Power surge explodes 'superloo'

# A so-called 'superloo' exploded in a town centre when an electrical fault caused water to surge back into the toilet, blowing off its roof and lifting the pavement.

Luckily no one was using the Automated Public Convenience at the time but it was badly damaged and remained closed on Wednesday while engineers worked at the site.

Energy bosses blamed a fault in high voltage cables underneath the toilet, in Hanley town centre, Stoke-on-Trent, and said an investigation was under way.

Police were called to reports of an explosion in Hanley town centre, Stoke-on-Trent, at 0445 GMT on Wednesday.

Officers found the roof ripped off and smoke coming from inside.

Parts of the surrounding pavement had also been lifted.

A spokesman said there were also unconfirmed reports that nearby traffic lights had been affected.

**66** This could have been quite distressing if not dangerous if someone had been in there and we are taking it very seriously

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cca Jackson, Aquila

#### 'Technical problem'

Rebecca Jackson, from Aquila, said they had isolated the cable but were investigating the fault and the siting of the toilet.

"This could have been quite distressing if not dangerous if someone had been in there and we are taking it very seriously," she said.

"We would like to reassure domestic customers this isn't something that is likely to happen in their own homes.

"They have low voltage cables and lines going into their properties, their homes should not be sited over high voltage cables."

The toilet, an Automated Public Convenience, was operated for the city council by JC Decaux.

The council's spokesman, Terry James said: "The toilets have been there for around two or three years.

"It doesn't appear to be vandalism or terrorism, it does appear to have been a technical problem."

BLACKSVILLE, W.Va. (AP) - Warning: smoking in the toilet can be dangerous. A portable toilet exploded Tuesday after a man who was inside it lit a cigarette.

Emergency workers said the man was not severely injured and drove himself to Clay-Battelle Community Health Center. He was later transferred to Ruby Memorial Hospital. His name and condition were not available Wednesday.

The explosion, which occurred in Blacksville, resulted from a buildup of methane gas inside the portable toilet. The methane did not "take too kindly" to the lit cigarette, said a spokeswoman for Monongalia Emergency Medical Services.

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Information from: The Dominion Post, <u>http://www.dominionpost.com</u>New Zealand Toilet Explosion

Urban Legends and Folklore Blog

May 30, 2003

New Zealand Toilet Explosion

A real-life exploding toilet in Thames, New Zealand sent a janitorial worker scurrying for cover as chunks of plastic and metal flew through the air and a faint odor of almonds — yes, almonds — permeated the public loo. The worker was unhurt in the blast, which police think was either caused by combustible cleaning fluids or teenage vandals. (And you thought YOU were having a bad day.)

MSDS Number: **F5522** \* \* \* \* *Effective Date:* **07/06/04** \* \* \* \* *Supercedes:* **05/08/03** 



# FORMALDEHYDE

### 1. Product Identification

Synonyms: Formaldehyde 37%; Formalin; Morbicid Acid; Methylene Oxide; Methyl aldehyde CAS No.: 50-00-0 Molecular Weight: 30.03 Chemical Formula: HCHO and CH3OH in water Product Codes: J.T. Baker: 2105, 2106, 2107, 2108 Mallinckrodt: 5014, 5016

### 2. Composition/Information on Ingredients

Ingredient Hazardous	CAS No	Percent	
Formaldehyde	50-00-0	37%	
Yes			
Methyl Alcohol	67-56-1	10 - 15%	
Yes			
Water	7732-18-5	48 - 53%	
No			

### 3. Hazards Identification

**Emergency Overview** 

POISON! DANGER! SUSPECT CANCER HAZARD. MAY CAUSE CANCER. Risk of cancer depends on level and duration of exposure. VAPOR HARMFUL. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. STRONG SENSITIZER. MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED. CANNOT BE MADE NONPOISONOUS. FLAMMABLE LIQUID AND VAPOR.

**SAF-T-DATA**<sup>(tm)</sup> Ratings (Provided here for your convenience)

- . .

Health Rating: 3 - Severe (Poison) Flammability Rating: 2 - Moderate Reactivity Rating: 2 - Moderate Contact Rating: 3 - Severe (Corrosive) Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER Storage Color Code: Red (Flammable)

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**Potential Health Effects** 

The perception of formaldehyde by odor and eye irritation becomes less sensitive with time as one adapts to formaldehyde. This can lead to overexposure if a worker is relying on formaldehyde's warning properties to alert him or her to the potential for exposure.

#### Inhalation:

May cause sore throat, coughing, and shortness of breath. Causes irritation and sensitization of the respiratory tract. Concentrations of 25 to 30 ppm cause severe respiratory tract injury leading to pulmonary edema and pneumonitis. May be fatal in high concentrations.

#### **Ingestion:**

Can cause severe abdominal pain, violent vomiting, headache, and diarrhea. Larger doses may produce decreased body temperature, pain in the digestive tract, shallow respiration, weak irregular pulse, unconsciousness and death. Methanol component affects the optic nerve and may cause blindness.

#### **Skin Contact:**

Toxic. May cause irritation to skin with redness, pain, and possibly burns. Skin absorption may occur with symptoms paralleling those from ingestion. Formaldehyde is a severe skin irritant and sensitizer. Contact causes white discoloration, smarting, cracking and scaling.

### **Eye Contact:**

Vapors cause irritation to the eyes with redness, pain, and blurred vision. Higher

concentrations or splashes may cause irreversible eye damage.

### **Chronic Exposure:**

Frequent or prolonged exposure to formaldehyde may cause hypersensitivity leading to contact dermatitis. Repeated or prolonged skin contact with formaldehyde may cause an allergic reaction in some people. Vision impairment and enlargement of liver may occur from methanol component. Formaldehyde is a suspected carcinogen (positive animal inhalation studies).

### **Aggravation of Pre-existing Conditions:**

Persons with pre-existing skin disorders or eye problems, or impaired liver, kidney or respiratory function may be more susceptible to the effects of the substance. Previously exposed persons may have an allergic reaction to future exposures.

### 4. First Aid Measures

### **Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

### **Ingestion:**

If swallowed and the victim is conscious, dilute, inactivate, or absorb the ingested formaldehyde by giving milk, activated charcoal, or water. Any organic material will inactivate formaldehyde. Keep affected person warm and at rest. Get medical attention immediately. If vomiting occurs, keep head lower than hips.

### **Skin Contact:**

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Thoroughly clean shoes before reuse. Get medical attention immediately.

### **Eve Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

### Note to Physician:

Monitor arterial blood gases and methanol levels after significant ingestion. Hemodyalysis may be effective in formaldehyde removal. Use formic acid in urine and formaldehyde in blood or expired air as diagnostic tests.

### 5. Fire Fighting Measures

### Fire:

Flash point: 60C (140F) CC Autoignition temperature: 300C (572F) Flammable limits in air % by volume:

lel: 7.0; uel: 73

Flammable liquid and vapor! Gas vaporizes readily from solution and is flammable in air.

### **Explosion:**

Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Containers may explode when involved in a fire.

### **Fire Extinguishing Media:**

Water spray, dry chemical, alcohol foam, or carbon dioxide.

### **Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-

contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Water may be used to flush spills away from exposures and to dilute spills to non-flammable mixtures.

### 6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802. If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures.

### 7. Handling and Storage

Store in a tightly closed container. Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Wear special protective equipment (Sec. 8) for maintenance break-in or where exposures may exceed established exposure levels. Wash hands, face, forearms and neck when exiting restricted areas. Shower, dispose of outer clothing, change to clean garments at the end of the day. Avoid cross-contamination of street clothes. Wash hands before eating and do not eat, drink, or smoke in workplace. Protect from freezing. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

### 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL):

0.75 ppm (TWA), 2 ppm (STEL), 0.5 ppm (TWA) action level for formaldehyde 200 ppm (TWA) for methanol

-ACGIH Threshold Limit Value (TLV):

0.3 ppm Ceiling formaldehyde, Sensitizer, A2 Suspected Human Carcinogen 200 ppm (TWA) 250 ppm (STEL) skin for methanol

### 200 ppm (TWA) 250 ppm (STEL) skin for methanol

### Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a full facepiece respirator with a formaldehyde cartridge may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres. Irritation also provides warning. For Methanol: If the exposure limit is exceeded and engineering controls are not feasible, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus. Breathing air quality must meet the requirements of the OSHA respiratory protection standard (29CFR1910.134). Where respirators are required, you must have a written program covering the basic requirements in the OSHA respirator standard. These include training, fit testing, medical approval, cleaning, maintenance, cartridge change schedules, etc. See 29CFR1910.134 for details.

#### **Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

#### **Eye Protection:**

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

#### **Other Control Measures:**

See OSHA Standard for more information on personal protective equipment, engineering and work practice controls, medical surveillance, record keeping, and reporting requirements. (29 CFR 1910.1048)

### 9. Physical and Chemical Properties

**Appearance:** Clear, colorless liquid. **Odor:** Pungent odor. **Solubility:** Infinitely soluble. **Specific Gravity:** 1.08 pH: 2.8 (31% solution) % Volatiles by volume @ 21C (70F): 100 **Boiling Point:** 96C (205F) **Melting Point:** -15C (5F) Vapor Density (Air=1): 1.04 Vapor Pressure (mm Hg): 1.3 @ 20C (68F) **Evaporation Rate (BuAc=1):** No information found.

### 10. Stability and Reactivity

### **Stability:**

Stable under ordinary conditions of use and storage.

### **Hazardous Decomposition Products:**

May form carbon dioxide, carbon monoxide, and formaldehyde when heated to decomposition.

### Hazardous Polymerization:

Trioxymethylene precipitate can be formed on long standing at very low temperatures. Nonhazardous polymerization may occur at low temperatures, forming paraformaldehyde, a white solid.

### **Incompatibilities:**

Incompatible with oxidizing agents and alkalis. Reacts explosively with nitrogen dioxide at ca. 180C (356F). Reacts violently with perchloric acid, perchloric acid-aniline mixtures, and nitromethane. Reaction with hydrochloric acid may form bis-chloromethyl ether, an OSHA regulated carcinogen.

### **Conditions to Avoid:**

Heat, flames, ignition sources and incompatibles.

### 11. Toxicological Information

Formaldehyde: Oral rat LD50: 100 mg/kg; skin rabbit LD50: 270 uL/kg, Irritation data: eye, rabbit, 750ug Severe; inhalation rat LC50: 203 mg/m3; investigated as a tumorigen, mutagen, reproductive effector; Cancer Status: an OSHA regulated carcinogen. Methanol: oral rat LD50: 5628 mg/kg; inhalation rat LC50: 64000 ppm/4H; skin rabbit LD50: 15800 mg/kg; investigated as a tumorigen, mutagen, reproductive effector.

\Cancer Lists\			
Ingredient	NTP Known	Carcinogen Anticipated	IARC
Category			
Formaldehyde (50-00-0)	No	Yes	
2A			
Methyl Alcohol (67-56-1)	No	No	
None			
Water (7732-18-5)	No	No	
None			

## 12. Ecological Information

### **Environmental Fate:**

The following statements refer to the environmental fate of formaldehyde. When released into the soil, this material is expected to leach into groundwater. When released into water, this material is expected to readily biodegrade. When released into water, this material is not expected to evaporate significantly. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl

radicals. When released into the air, this material is expected to be readily degraded by photolysis. When released into the air, this material is expected to be readily removed from the atmosphere by dry and wet deposition. When released into the air, this material is expected to have a half-life of less than 1 day. The following statements refer to the environmental fate of methanol. When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is expected to quickly evaporate. When released into the soil, this material is expected to quickly evaporate. When released into water, this material is expected to readily biodegrade. When released into the water, this material is expected to have a half-life between 1 and 10 days. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to be readily removed from the atmosphere by wet deposition. When released into air, this material is expected to have a half-life between 10 and 30 days.

#### **Environmental Toxicity:**

The following toxicity information is for the formaldehyde portion.

96 Hr LC50 fathead minnow: 24.1 mg/L (flow-through);

96 Hr LC50 bluegill: 0.10 mg/L (flow-through);

96 Hr EC50 water flea: 20 mg/L.

The methanol portion is expected to be slightly toxic to aquatic life. The LC50/96-hour values for fish are between 10 and 100 mg/l.

### 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

### 14. Transport Information

**Domestic (Land, D.O.T.)** 

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**Proper Shipping Name:** RQ, FORMALDEHYDE, SOLUTION, FLAMMABLE **Hazard Class:** 3, 8 **UN/NA:** UN1198 Packing Group: III **Information reported for product/size:** 200L

International (Water, I.M.O.)

**Proper Shipping Name:** FORMALDEHYDE SOLUTIONS **Hazard Class:** 3, 8 **UN/NA:** UN1198 Packing Group: III **Information reported for product/size:** 200L

### 15. Regulatory Information

------\Chemical Inventory Status - Part 1\------\_\_\_\_\_ TSCA EC Ingredient Japan Australia \_\_\_\_\_ \_\_\_\_\_ Formaldehyde (50-00-0) Yes Yes Yes Yes Yes Yes Yes Methyl Alcohol (67-56-1) Veg Water (7732-18-5) Yes Yes Yes Yes ------\Chemical Inventory Status - Part 2\-----\_\_\_\_\_ --Canada--Korea DSL NDSL Ingredient Phil. \_\_\_\_\_ \_\_\_\_ \_\_ \_\_\_\_ Formaldehyde (50-00-0) Yes Yes No Yes Methyl Alcohol (67-56-1) Yes Yes No Yes Water (7732-18-5) Yes Yes No Yes -----\Federal, State & International Regulations - Part 1\-----\_\_\_\_\_ -SARA 302- ----SARA 313-----TPO List Ingredient RO Chemical Catg. ----- ----\_\_\_\_ \_\_\_ \_\_\_\_ \_\_\_\_\_ 500 Yes Formaldehyde (50-00-0) 100 No No No Yes Methyl Alcohol (67-56-1) No Water (7732-18-5) No No No No -----\Federal, State & International Regulations - Part 2\-----\_\_\_\_\_ -RCRA-TSCA-Ingredient CERCLA 261.33 8(d) -----\_\_\_\_ \_\_\_ \_ \_ \_ Formaldehyde (50-00-0) 100 U122 No Methyl Alcohol (67-56-1) 5000 U154 No Water (7732-18-5) No No No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No Reactivity: No (Mixture / Liquid)

### WARNING:

THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

### Australian Hazchem Code: 2SE Poison Schedule: S6 WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

### 16. Other Information

**NFPA Ratings:** Health: **3** Flammability: **2** Reactivity: **0** Label Hazard Warning:

POISON! DANGER! SUSPECT CANCER HAZARD. MAY CAUSE CANCER. Risk of cancer depends on level and duration of exposure. VAPOR HARMFUL. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. STRONG SENSITIZER. MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED. CANNOT BE MADE NONPOISONOUS. FLAMMABLE LIQUID AND VAPOR.

### **Label Precautions:**

Keep away from heat, sparks and flame.

Do not get in eyes, on skin, or on clothing.

Do not breathe vapor.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

Physical and health hazard information is available from employer and from material safety data sheets.

### Label First Aid:

In all cases get medical attention immediately. If swallowed and the victim is conscious, dilute, inactivate, or absorb the ingested formaldehyde by giving milk, activated charcoal, or water. Any organic material will inactivate formaldehyde. Keep affected person warm and at rest. If vomiting occurs, keep head lower than hips. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

#### **Product Use:**

Laboratory Reagent.

#### **Revision Information:**

MSDS Section(s) changed since last revision of document include: 3, 12. **Disclaimer:** 

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#### Chemietoiletten

Zu der Standardausrüstung von Wohnwagen, Wohnmobilen, Reisebussen sowie Booten gehören häufig Chemietoiletten. Die zugesetzten Chemikalien sind Gift für die Umwelt. Der Inhalt der Chemietoiletten darf keinesfalls in die Landschaft, in Gewässer oder in Hof-/Straßenabläufe entleert werden, auch wenn die Werbung ''volle biologische Abbaubarkeit'' verspricht. Der Einsatz von Chemietoiletten in Kleingärten ist daher nicht zulässig.