

MATERIAL SAFETY DATA SHEET

Tenkoz Inc.

Emergency Phone: 800-424-9300
Tenkoz Inc.
Alpharetta, GA 30022

GOVERN 4E INSECTICIDE

Effective Date: 4/1/04
Product Code: 47602
MSDS: 005688

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Govern 4E Insecticide

COMPANY IDENTIFICATION:

Tenkoz Inc.
100 North Point Center East
Alpharetta, GA 30022

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Chlorpyrifos: 0,0-diethyl- O-(3,5,6-trichloro-2- pyridinyl)phosphorothioate	CAS # 002921-88-2	44.9%
Balance, Total, Including: Xylene Range Aromatic Solvent	CAS # 064742-95-6	55.1%
Trimethylbenzene	CAS # 000095-63-6	
Cumene	CAS # 000098-82-8	
Xylene	CAS # 001330-20-7	
Ethyltoluene	CAS # 025550-14-5	

INHALATION: Remove person to fresh air and if not breathing give artificial respiration, preferably mouth to mouth.

NOTE TO PHYSICIAN: Because rapid absorption may occur through the lungs if aspirated and cause systemic effects, the decision of whether to induce vomiting or not should be made by a physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. If exposed, plasma and red blood cell cholinesterase tests may indicate significance of exposure (baseline data are useful). Atropine, only by injection, is the preferable antidote. Oximes, such as 2-PAM/protopam, may be therapeutic if used early; however, use only in conjunction with atropine. In case of severe acute poisoning, use antidote immediately after establishing an open airway and respiration. Exposure may increase "myocardial irritability". Do not administer sympathomimetic drugs unless absolutely necessary. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

3. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW

Red liquid with solvent-type odor. May cause eye irritation or corneal injury. Prolonged exposure may cause skin irritation. Cholinesterase inhibitor. Toxic to aquatic organisms, birds, and fish. Store at temperatures below 122°F (50°C)

EMERGENCY PHONE NUMBER: 800-424-9300

4. FIRST AID:

EYES: Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist.

SKIN: Immediately wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash clothing before reuse. Destroy contaminated shoes and other contaminated leather articles such as belts and watchbands.

INGESTION: Call a physician or poison control center immediately. Do not induce vomiting. Contains an aromatic petroleum solvent. Do not give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES:

FLASH POINT: 106°F (41°C)
METHOD USED: TCC

FLAMMABLE LIMITS

LFL: 1%
UFL: 6% (xylene range aromatic solvent)

HAZARDOUS COMBUSTION PRODUCTS: During a fire, smoke may contain the original material in addition to unidentified toxic and/or irritating compounds. Hazardous combustion products may include and are not limited to sulfur oxides, phosphorus compounds, nitrogen oxides, hydrogen chloride, carbon monoxide, and/or carbon dioxide.

OTHER FLAMMABILITY INFORMATION: Dense smoke is produced when product burns. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Vapors are heavier than air and may travel a long distance and accumulate in low-lying areas. Ignition and/or flash back may occur. Container may rupture from gas generation in a fire situation.

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EXTINGUISHING MEDIA: Water fog or fine spray, carbon dioxide, dry chemical or foam. Alcohol resistant foams (ATC type) are preferred if available. General-purpose synthetic foams (including AFFF) or protein foams may function, but much less effectively.

explosion-proof equipment. If available, use foam to smother or suppress.

MEDIA TO BE AVOIDED: Do not use direct water stream.

FIRE-FIGHTING INSTRUCTIONS: Keep people away. Isolate fire area and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Eliminate ignition sources. Consider feasibility of a controlled burn to minimize environmental damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Burning liquids may be moved by flushing the water to protect personnel and minimize property damage. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Fight fire from protected location or safe distance. Consider use of unmanned hose holder or monitor nozzles. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of re-ignition has passed. Immediately withdraw all personnel from area in case of rising sound from venting safety device or discoloration of the container. Move container from fire area if this is possible without hazard. Contain firewater run-off if possible. Fire water run-off, if not contained may cause environmental damage. Review the "Accidental Release Measures" and "Ecological Information" sections of this MSDS.

PROTECTIVE EQUIPMENT FOR FIREFIGHTERS: Where positive-pressure self-contained breathing apparatus (SCPA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants, boots, and gloves). If protective equipment isn't available or not used, fight fire from a protected location or safe distance.

6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS/LEAKS: Absorb spills with an absorbent material such as HAZORB, ZORBALL, or dirt. Thoroughly wash body areas, which come into contact with this product. Contain spill to keep out of sewers. Report large spills to Chemtrec at 800-424-9300. Vapor explosion hazard, keep out of sewers. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Pump with

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7. HANDLING AND STORAGE:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep out of reach of children. Do not swallow. Do not get in eyes, on skin, or on clothing. Avoid breathing spray mist and vapors. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Use of non-sparking or explosion proof equipment may be necessary, depending upon the type of operation. No smoking, open flames or sources of ignition in handling and storage area. Minimize sources of ignition, such as static buildup, heat, spark, or flame. Store in original container with the lid tightly closed. Store at temperatures below 122°F (50°C).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

These precautions are suggested for conditions where a potential for exposure exists. Emergency conditions may require additional precautions.

EXPOSURE GUIDELINE(S):

Chlorpyrifos: ACGIH TLV is 0.1 mg/M³, (I,V); A4, Skin BEI.
Aromatic 100 (xylene range aromatic solvent): none established. Supplier recommends a guideline of 50 ppm for the total product which is a mixture of petroleum hydrocarbons.

Trimethylbenzene: ACGIH TLV is 25 ppm.

Cumene (isopropyl benzene): ACGIH TLV and OSHA PEL are 50 ppm. OSHA classifies as Skin.

Xylene: ACGIH TLV is 100 ppm TWA, 150 ppm STEL, A4. OSHA PEL is 100 ppm TWA

Ethyltoluene: Dow AgroSciences Industrial Hygiene Guide is 10 ppm.

A 'skin' notation following the exposure guideline refers to the potential for dermal absorption of the material including mucous membranes and the eyes either by contact with vapors or by direct skin contact. It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposures should be considered.

ENGINEERING CONTROLS: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines. Use only with adequate ventilation.

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RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guidelines. When respiratory protection is required, use a NIOSH approved air-purifying or positive-pressure supplied-air respirator depending on the potential airborne concentration. For emergency and other conditions where the exposure guideline may be greatly exceeded, use a NIOSH approved positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. In confined or poorly ventilated areas, use a NIOSH approved positive-pressure supplied-air respirator.

SKIN PROTECTION: Use protective clothing chemically resistant to this material. Selection of specific items such as faceshield, gloves, boots, apron or full body suit will depend on operation. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse. Items, which cannot be decontaminated, such as shoes, belts and watchbands, should be removed and disposed of properly.

EYE PROTECTION: Use chemical goggles. If exposure causes eye discomfort, use a NIOSH approved full-face respirator.

APPLICATORS AND ALL OTHER HANDLERS: Refer to the product label for personal protective clothing and equipment.

9. PHYSICAL AND CHEMICAL PROPERTIES:

BOILING POINT: 290°F (143°C)(solvent)
VAPOR PRESSURE: <10 mmHg @ 25°C
VAPOR DENSITY: Not determined
SOLUBILITY IN WATER: Emulsifiable
SPECIFIC GRAVITY: 1.079
APPEARANCE: Red liquid
ODOR: Solvent-type odor

10. STABILITY AND REACTIVITY:

STABILITY: Unstable at elevated temperatures.

CONDITIONS TO AVOID: Avoid temperatures >122°F (>50°C). Chlorpyrifos decomposes at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

HAZARDOUS DECOMPOSITION: Hazardous decomposition products depend upon temperature, air supply and the presence of other materials. Hazardous decomposition products may include and are not limited to hydrogen chloride, organic sulfides and sulfur dioxide. Toxic gases are released during decomposition

INCOMPATIBLE MATERIALS: Avoid contact with oxidizing materials and bases.

HAZARDOUS POLYMERIZATION: Not known to occur.

11. TOXICOLOGICAL INFORMATION:

EYE: May cause moderate eye irritation and/or corneal injury. Vapors may cause eye irritation experienced as mild discomfort and redness.

SKIN: Prolonged contact may cause moderate skin irritation with local redness. A test in guinea pigs indicated that this product may have weak skin sensitization potential. However, experience in the manufacture and use of this product has not provided evidence for skin sensitizing properties. The product did not sensitize human subjects when tested at an end-use dilution. Prolonged skin contact is unlikely to result in absorption of harmful amounts. The LD₅₀ for skin absorption in male rats is >5000 mg/kg.

INGESTION: Moderate toxicity if swallowed. The oral LD₅₀ for rats is 776 mg/kg (males) and 300 mg/kg (females). Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury, even death. Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia.

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INHALATION: The aerosol LC₅₀ for rats is 2.7 mg/L for 4 hours. Excessive exposure may produce organophosphate-type cholinesterase inhibition. Vapor concentrations are attainable which could be hazardous on single exposure. Excessive exposure to solvent may cause respiratory irritation and central nervous system depression. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness.

SYSTEMIC (OTHER TARGET ORGAN EFFECTS):

Excessive exposure may produce organophosphate-type cholinesterase inhibition. Signs and symptoms of excessive exposure to chlorpyrifos may be headache, dizziness, incoordination, muscle twitching, tremors, nausea, abdominal cramps, diarrhea, sweating, pinpoint pupils, blurred vision, salivation, tearing, tightness in chest, excessive urination, convulsions. Chlorpyrifos produced mild adrenal effects when fed to rats, but only at doses that greatly exceeded any exposures that would be received during normal use of this product. Solvent has been reported to cause liver, kidney, and blood effects at high exposure levels. Xylene is reported to have caused hearing loss in laboratory animals upon exposure to high concentrations; such effects have not been reported in humans. For cumene, in animals, effects have been reported on the following organ: eye (cataract).

CANCER INFORMATION: Chlorpyrifos did not cause cancer in laboratory animals. Xylene was not found to be carcinogenic in a National Toxicology Program bioassay in rats and mice.

TERATOLOGY (BIRTH DEFECTS): Chlorpyrifos did not cause birth defects in laboratory animals. Solvent was toxic to the fetus in laboratory animal tests, but only at doses that were toxic to the mothers. Very high concentrations of solvent (producing severe toxicity to adult animals) induced an increase in cleft palate in mice, which is a common developmental abnormality in mice and is associated with stress to the maternal animals. No malformations were induced at exposures less than those causing severe toxicity to the adult animals. This product contains low levels of xylene. Exaggerated doses of xylene given orally to pregnant mice resulted in an increase in cleft palate, a common developmental abnormality in mice. In animal inhalation studies, xylene caused toxicity to the fetus but did not cause birth defects.

REPRODUCTIVE EFFECTS: Chlorpyrifos did not interfere with fertility in reproduction studies in laboratory animals. Some evidence of toxicity to the offspring occurred, but only at a dose high enough to produce significant toxicity to the parent animals. In a 3-generation reproduction study on the solvent, the only effects observed were at exposures that produced severe toxicity to the parent animals.

MUTAGENICITY (EFFECTS ON GENETIC MATERIAL):

Results of in-vitro and animal genetic toxicity studies on the aromatic solvent have been negative. Based on a majority of negative data and some equivocal or marginally positive results, chlorpyrifos is considered to have minimal mutagenic potential.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL FATE:

MOVEMENT & PARTITIONING:

Based largely or completely on information for chlorpyrifos and components of Aromatic 100.

Bioconcentration potential is moderate (BCF is between 100 and 3000 or Log Pow between 3 and 5).

DEGRADATION & PERSISTENCE:

Based largely or completely on information for chlorpyrifos.

The photolysis half-life in water is 3-4 weeks.

Tropospheric half-life is estimated to be 1.4 hours.

Degradation is expected in the soil environment within days to weeks.

Under aerobic soil conditions the half-life is generally 30-60 days.

Based largely or completely on information for components of Aromatic 100.

Biodegradation under aerobic static laboratory conditions is high (BOD 20 or BOD28/ThOD is >40%).

ECOTOXICOLOGY:

Based largely or completely on information for chlorpyrifos.

Material is very highly toxic to aquatic organisms on an acute basis (LC₅₀ or EC₅₀ <0.1 mg/L in most sensitive species tested).

Material is highly toxic to birds on a dietary basis (LC₅₀ between 50 and 500 ppm).

Material is moderately toxic to birds on an acute basis (LD₅₀ is between 51 and 500 mg/kg).

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Based largely or completely on information for Aromatic 100.

Material is moderately toxic to aquatic organisms on an acute basis (LC₅₀ or EC₅₀ is between 1 and 10 mg/L in most sensitive species).

Material is practically non-toxic to birds on a dietary basis (LC₅₀ is >5000 ppm).

Material is practically non-toxic to birds on an acute basis (LD₅₀ is >2000 mg/kg).

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities.

This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

If the material as supplied becomes a waste, follow all applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION:

U.S. DEPARTMENT OF TRANSPORTATION (DOT) INFORMATION:

For non-bulk land and air shipments:

ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC, FLAMMABLE, (CHLORPYRIFOS, AROMATIC NAPHTHA)/6.1/UN3017/PG III/RQ (CHLORPYRIFOS)

For non-bulk vessel shipments:

ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC, FLAMMABLE, (CHLORPYRIFOS, AROMATIC NAPHTHA)/6.1/UN3017/PG III/RQ (CHLORPYRIFOS)/MARINE POLLUTANT

For bulk shipments:

ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC, FLAMMABLE, (CHLORPYRIFOS, AROMATIC NAPHTHA)/6.1/UN3017/PG III/RQ (CHLORPYRIFOS, XYLENE)/MARINE POLLUTANT

15. REGULATORY INFORMATION:

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.

U.S. REGULATIONS

SARA 313 INFORMATION: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

CHEMICAL NAME	CAS NUMBER	CONCENTRATION
1,2,4-Trimethylbenzene	000095-63-6	16 %
Xylene	001330-20-7	1.5%

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard
A delayed health hazard
A fire hazard

TOXIC SUBSTANCES CONTROL ACT (TSCA): All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

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STATE RIGHT-TO-KNOW: The following product components are cited on certain state lists as mentioned. Non-listed components may be shown in the composition section of the MSDS.

CHEMICAL NAME	CAS NUMBER	LIST
Xylene	001330-20-7	NJ1 NJ2 NJ3 PA1 PA3
Chlorpyrifos	002921-88-2	NJ3 PA1 PA3
1,2,4-Trimethylbenzene	000095-63-6	NJ2 NJ3 PA1
Cumene	000098-82-8	NJ2 NJ3 PA1 PA3

NJ1=New Jersey Special Health Hazard Substance (present at greater than or equal to 0.1%).
NJ2=New Jersey Environmental Hazardous Substance (present at greater than or equal to 1.0%).
NJ3=New Jersey Workplace Hazardous Substance (present at greater than or equal to 1.0%).
PA1=Pennsylvania Hazardous Substance (present at greater than or equal to 1.0%).
PA3=Pennsylvania Environmental Hazardous Substance (present at greater than or equal to 1.0%).

OSHA HAZARD COMMUNICATION STANDARD: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:

Category	Rating
Health	2
Flammability	2
Reactivity	1

COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA, or SUPERFUND): This product contains the following substance(s) listed as "Hazardous Substances" under CERCLA, which may require reporting of releases:

Chemical Name	CAS Number	RQ	% in Product
Chlorpyrifos	002921-88-2	1	44.9%
Xylene	001330-20-7	100	1.5%
Cumene	000098-82-8	5000	0.75%

16. OTHER INFORMATION:

MSDS STATUS: Revised Sections: 14
Reference: DR-0352-3817
Replaces MSDS Dated: 3/23/04
Document Code: D03-062-006
Replaces Document Code: D03-062-005

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The Information Herein Is Given In Good Faith, But No
Warranty, Express or Implied, Is Made. Consult Tenkoz
Inc. for Further Information.