



## Coghlan's Emergency Drinking Water Germicidal Tablet EPA Reg. No. 79533-1

### Product Information

Coghlan's Drinking Water Germicidal Tablets are intended for emergency disinfection of drinking water. When used as directed, they can make most waters bacteriologically suitable for drinking. Used worldwide by the military, emergency organizations, campers, hikers and anyone faced with the need to drink water of uncertain bacteriological quality, the product is for use only when water is suspected or known to be substandard. These are not for use on a continuous basis. For short term or limited emergency use only.

1. The germicidal agent is available as a tablet of such size as to permit use of one or two tablets for small quantities of water.
2. The method of application is simple, reasonably foolproof, and time efficient.
3. The tablet dissolves or disintegrates rapidly and releases its active ingredient quickly to allow a maximum contact time for germicidal action.
4. The treated water is acceptable to users; specifically, the odor, flavor, and general appearance of the water is not objectionable. The normal appearance and flavor of foods, concentrates, and powdered beverages are not changed when used in conjunction with the purified water.
5. The treated water is not corrosive to water containers; however, it may stain some plastics.

### **Comparison of Two Water Purification Methods**

	Coghlan's Tablets	Iodine Crystals
Packing	50 tablets per bottle (1/10 the lethal dose)	4-8 grams/ bottle (1-2x the lethal dose)
Shelf Stability	excellent	poor
Stability Exposed to Air	excellent	poor (sublimes)
Solubility/Effectiveness	excellent	poor (temp. dependent)
Pack Soil	inert	corrosive
Vaporization	negligible vaporization	toxic fumes
Administration	simple-tablet dose	complicated -decanting required-
pH	less pH dependent	no buffer
Organic Matter	less affected by organics	variable iodine levels
Nitrogenous Matter Tolerant	tolerant	variable
Taste	generally acceptable	frequently unacceptable
Dosage Accuracy	very accurate	dangerously variable

The above table clearly indicates Coghlan's Drinking Water Tablets as the best choice for disinfection of small quantities of water. In fact, a technical report presented to the U.S. Army Medical R&D Command entitled "Mode of Action of Halogens on Bacteria, Viruses, and Protozoa in Water Systems", states the following: "Evidence supports the conclusion that the iodine releasing tablet (MIL W 283- the military specification for Coghlan's), buffered to lower the pH of water treated, is the nearest to a universal canteen disinfectant at this time."

Coghlan's Drinking Water Tablets provides a controlled, consistent dose of iodine. Iodine crystal doses may vary, depending on the user's accuracy and the solubility, which is pH and temperature dependent. Toxic levels of iodine may occur with an overdose of iodine crystals. Coghlan's tablets, when used according to directions, eliminated this possibility of toxic iodine levels.

Coghlan's Drinking Water Tablets contain iodine in a proprietary compound called TGHP (Tetraglycine Hydroperiodide). Iodine is an effective agent for making water bacteriologically suitable for drinking. Each tablet contains 20 milligrams of

TGHP, which liberates 8 milligrams (ppm) of titratable iodine. Chang, et al, states, “Almost all waters can be made safe for drinking with a single dose of iodine of approximately 8 ppm.”

Iodine, in the concentration released by Coghlan’s Drinking Water Tablets, has been found to kill the following organisms:

Gram Negative Bacteria	Gram Positive Bacteria	Spirochetes	Viruses	Protozoa	Flatworms
Escherichia coli	Streptococcus faecalis	Leptospira icterohaemorrhagiae	Infectious hepatitis	Entamoeba histolytica (amoebic dysentery)	Schistosoma cercariae (aka Bilharzia)
Vibrio cholerae			Poliomyelitis	Giardia lamblia (Giardiasis)	
Salmonella typhosa					
Salmonella typhi-murium					
Salmonella paratyphi					
Shigella dysenteriae					
Shigella flexneri					
Shigella sonnei					
Aerobacter aerogenes					
Klebsiella terrigena					

### Coghlan’s Chemistry

Each Coghlan’s Drinking Water Tablet contains 20 mg of Tetraglycine Hydroperiodide (TGHP), which liberates 8 milligrams (ppm) of titratable iodine. This compound has a lower vapor pressure than iodine crystals, thus making the tablets more stable. TGHP is also readily soluble in water, unlike iodine crystals, which dissolve slowly and weakly in water. Dissolving Coghlan’s tablets in water releases the iodine bound in the TGHP molecule.

Diatomic iodine (I<sub>2</sub>) and hypiodous acid (HIO) are the most prevalent entities. Because the tablets contain a buffer, the treated water is maintained at acidic conditions with an approximate pH level of 5.5. Diatomic iodine is more abundant than hypiodous acid, as this mixture provides adequate disinfection of most waters.

Chemical reaction rates and, consequently, germicidal effects, are subject to variables such as water temperature and level of contamination in the water. For this reason two tablets of Coghlan’s Drinking Water Tablets are required.

## Safety Data

Coghlan's Drinking Water tablets are used as an emergency treatment for disinfecting drinking water. Coghlan's Drinking Water Tablets are not for use on a continuous basis. For short term or limited emergency use only. Coghlan's Drinking Water Tablets has not been shown to inactivate the cryptosporidium cyst.

The recommended dosage of Coghlan's Drinking Water Tablets, as indicated by the directions on the label, is two tablets in one liter or quart of water. With the recommended dosage of two tablets per liter of water, 16 mg of elemental iodine is released in the water. This dosage is equivalent to 16 ppm of elemental iodine in the water. Since this product is intended for use in emergency situation, extended daily use should be kept to a limited basis not exceeding 6 weeks.

Several studies have demonstrated that no evidence exists indicating long-term use of iodinated water as being deleterious to the health. These studies include A.P. Block's paper in *The Journal of America Water Works Association*, Vol. 60, Number 1 and Donald P. Morgan's study, "Test of Chronic Toxicity of Iodine as Related to the Purification of Water," which appeared in *The United States Armed Forces Medical Journal*, Vol. 4, Number 5.

Subjects in Morgan's study consumed iodinated water for 16 weeks at a daily dosage of 12 milligrams per subject per day. During the last ten weeks of the study, the iodine concentration was increased to an estimated dosage of 19.2 milligrams per subject per day. Analysis of the resulting data revealed that subjects did not suffer weight loss, failure of vision, cardiovascular damage, altered thyroid activity, anemia, bone marrow depression, or renal irritation. It was the opinion of the investigators that consumption of iodinated water over a six month period did not result in an unusual incidence of any form of skin disease. There was no evidence of sensitivity to iodine among the healthy subjects, nor was there any indication of impaired wound healing or resolution of infections as a result of consumption of iodinated water.

These tests furnish evidence that Coghlan's Drinking Water Tablets contain an iodine level, which can safely be used for short-term use.

## Indications

Coghlan's Drinking Water Tablets is indicated for emergency disinfection of drinking water. When used as directed, they make most water bacteriologically suitable for drinking. A necessity for travelers, campers, backpackers, hunters, boaters, and outdoorsmen. It is essential for anyone who may encounter water of questionable quality, and is ideal for survival and first aid kits.

Coghlan's Drinking Water Tablets also provides an excellent solution with which to wash fruit or vegetables to eliminate harmful contaminants.

Coghlan's Drinking Water Tablets has not been shown to inactivate the cryptosporidium cyst.

## Dosage and Method of Use

Coghlan's Drinking Water Tablets are to be dissolved in water to form a solution for consumption. The tablets are not to be swallowed.

Add two tablets to one quart or liter of water. Cap loosely to allow slight leakage and wait 5 minutes. Shake the container briskly so that a small amount of water seeps out to rinse the screw threads. This will help to disinfect the lip of the container, which may have come into contact with the untreated water. Tighten the cap and wait 30 minutes before drinking.

**WARNING:** Tablets may be harmful if swallowed. Avoid eye contact. Will cause severe irritation to eyes and mucous membranes. Avoid contamination of food. Wash hands after handling. **FIRST AID:** If tablet is swallowed, drink freely a thin paste of starch or flour (2 tablespoons in water). In case of contact with eyes, flush thoroughly with water. Call a physician.

## Shelf Life:

Unopened bottles of Coghlan's Drinking Water Tablets, when maintained under controlled temperatures between 60 and 86 F (15-30 C), should remain effective up to four years. Exposure to heat, humidity, moisture, and air will reduce the effectiveness of the tablets. We recommend that you do not keep an opened bottle for more than one year. Keep the cap tightly sealed.

## Expiration Date:

Although this product is not required to have expiration dating, an explanation of our lot numbering system is provided for your convenience. This lot number is imprinted on the label of the bottle. Example:

This means the product was manufactured the 4<sup>th</sup> month in the 1998 and was the 127<sup>th</sup> batch or product made. Under normal storage conditions, this product would be effective for at least 4 years for an unopened bottle and 1 years for an opened bottle.

Please direct any product questions about Coghlan's to:

Coghlan's Ltd.  
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## BIBLIOGRAPHY

- Berg, G., et al. (1964). Devitalization of microorganisms by iodine. Virology, 22: 469-481.
- Berkow, R. Ed. (1977). The Merck Manual of Diagnosis and Therapy. Merck and Company, Inc.
- Block, A.P., et al. (1968) Iodine and the disinfection of water. Journal of the Americal Water Works Association, 60: 69-82.
- Chang, S.L. (1944) Studies of Entamoeba histolytica III. (Destruction of cysts of Entamoeba histolytica by a hypochlorite solution, chloramines in tap water and gaseous chlorine in tap water of varying degrees of pollution). War Med., 5: 417-423.
- Chang, S.L. (1958). The use of active iodine as a water disinfectant for drinking water., Journal of the American Pharm. Association., 47: 417-423.
- Chang, S.L. & Morris, J.C. (1953). Elemental iodine as a disinfectant for drinking water., Industrial Engineering Chem., 45: 1009-1012.
- Croun, G.F. (1979). Waterborne Giardiasis in the United States: a Review, American Journal of Public Health, 69: 817-819.
- Environmental Protection Agency. (1980). Don't Drink the Water... Until You Have Read This. Washington, DC: U.S. Government Printing Office.
- Foust, et al. (1970). Clinical Parasitology (8<sup>th</sup> ed.) Philadelphia: Lea & Febiger.
- Hettweg, P.A. et al. (1981, November/December). Water purification- a new look at the role of iodine. Summit: 21-22.
- Jakubowski, W., et al. (1979). Water borne transmission of Giardiasis. In Proceedings of a Symposium (p. 239). Environmental Protection Agency.
- Jarroll E.L., et al. (1980) Giardia cyst destruction: effectiveness of six small-quantity water disinfection methods. American Journal of Tropical Medicine and Hygiene. 29:8-11.
- Jarroll, E.L., et al. (1980). Inability of an iodination method to destroy completely Giardia cysts in cold water. West Journal of Medicine, 132: 567-569.
- Jarroll, E.L., et al. (1981). Effect of chlorine on Giardia lamblia cyst viability. Applied and Environmental Microbiology, 41: 483-487.
- Kahn, F.H. & Visscher, B.R. (1975). Water disinfection in the wilderness- a simple effective method of iodination information. Western Journal of Medicine. 122: 450-453.
- Kerasote, T. (1980). Camping: modern water purification. Sports Afield, 184.
- Morgan, D.P., & Karpen, R.J. (1953). Test of chronic toxicity of iodine as related to the purification of water. U.S. Armed Forces Medical Journal, 4: 725-728.
- Morris, J.C., et al. (1953). Disinfection of drinking water and field conditions. Industrial Engineering Chem. 45: 1013-1015.
- O'Conner, J.T. & Kapoor, S.K. (1970). Small quantity field disinfection, Journal of the American Water Works Association, 62:80-84.
- Rogers, M.R. et al. (1977) Military individual and small group disinfection systems. Assessment of Military Medicine. 141: 268-277.
- U.S. Army Natick R & D Command. (1979). Military Specification: Water Purification Tablet, Iodine (MIL-W-283).
- Windholz Med. (1976). The Merck Index: An Encyclopedia of Chemicals and Drugs (9<sup>th</sup> ed.), Merck & Company, Inc.

Zemlyn, S., et al. (1981, August). A caution on iodine purification, Western Journal of Medicine, 135: 166-167.