

ENVIRO-PURE (ASIA) LIMITED PARTNERSHIP – THAILAND INNOVATIVE WATER TREATMENT SOLUTIONS



Working to improve water

Wardwell : Mercv Corps

Approved and used by:



New: On-Site Production and Dosing of Chlorine Easy to Manage, Safe, No Electricity

- **Based on 40 Years of Experience with Slow Dissolving Tablets**
- **Used by NGO's Worldwide: Treating 25 Billion L/Yr=800,000 L/sec-24/7**
- **Dry Product, Safe to Handle and No Loss of Strength**
- **In 2001 Approved by U.S.EPA for use in drinking water plants**
- **WHO States: No Risk for Health from By-Products**
- **Flow-Through Dispenser with Easily Replaceable Cartridge**
- **No Skills Required, No Electricity, Dynamic-Hydraulic Mixing**
- **Field-Adjustable between 0.1 and 5 ppm free Chlorine**
- **Ground-and Rain- Water Disinfection and Residual Protection**
- **Surface Water Treatment in Combination with our *smartUF Systems***

Safe Water in One Step from River to Tap
Smart European Technology from the Heart of ASEAN

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TECHNICAL INFORMATION

Chlorination:

Chlorine is applied to water in one of four principal forms: elemental chlorine (chlorine gas), sodium hypochlorite solution (liquid bleach), or dry calcium hypochlorite. Chlorinated Isocyanurates are also used for some drinking water applications (but more commonly for swimming pool disinfection). All produce free chlorine in water.

The World Health Organization has stated that "the risks to health from by-products are extremely small in comparison with the risks associated with inadequate disinfection"

WHO drinking water guidelines: extract for Trichloroisocyanure tablets (AQUATABS)

In July 2001, the **U. S. EPA** approved chlorinated isocyanurates, trichloroisocyanuric acid and sodium dichloroisocyanurate (anhydrous or dihydrate), for routine treatment of drinking water. These are the first new chlorine-based disinfectants approved for drinking water use in many years. This information summarizes the chemical and physical properties of these materials, discusses how they are normally used, and compares their properties to the other chlorine-based products. Chlorinated isocyanurates are stable, dry solids, containing high concentrations of available chlorine, and are available in either tablet or granular form. Feeders for each form are available in various sizes, so that these materials can be used in a range of water systems, with chlorine-equivalent feed rates ranging from less than one to greater than 200 pounds per day.

Since these products are solids, a spill or leak is easily contained and cleaned up. They are very stable over time, maintaining their available chlorine content almost indefinitely. They dissolve completely and do not contain calcium, and thus do not contribute to scale or sludge formation.

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Chlorinated isocyanurates have been used in swimming pools for over forty years, and a significant data base of toxicity information has been developed to support the EPA registrations. This data supports the conclusion that these materials are **safe for treatment of potable water**. A unique feature of the chlorinated isocyanurates is the presence of cyanuric acid. Cyanuric acid is not fetotoxic, teratogenic, mutagenic, or carcinogenic and does not bioaccumulate. Exposure calculations show that no more cyanuric acid is ingested via drinking water than is normally ingested during pool use. Chlorinated isocyanurates are certified by NSF under Standard 60.

Table 9. Properties of Trichloroisocyanuric Acid,			
UN No.	2468		
CAS No.	87-90-1		
Formula	C3O3N3Cl3		
Physicochemical Properties	White crystal powder, granular or tablets, with stimulant smell of Hypochloric Acid, slightly soluble in water, easily soluble in Acetone.		
Specifications	Powder	(200g)	Tablet :20g)
Available Chlorine	90% min.		
Moisture	0.5% max.		
pH Value (1% W. S.)	2.7-2.9		
Packing	25 or 50 kg plastic drums		
Qty/20' FCL (MT)	20		

The present review summarizes the synthetic application of trichloroisocyanuric acid [1,3,5-trichloro1,3,5-triazine-2,4,6- (1H,3H,5H)-trione] as a convenient reagent for the electrophilic chlorination of unsaturated carbon-carbon bonds and focuses on its green aspects. Chlorination reactions involving alkenes, alkynes, arenes, and (di)carbonyl compounds and the chlorodecarboxylation of cinnamic acids (Hunsdiecker reaction) are presented and discussed. Trichloroisocyanuric acid is a safe, stable, easily handled, inexpensive and commercially available solid. At the end of the reactions, cyanuric acid is obtained as by-product and can be reused to produce trichloroisocyanuric acid. **In accordance with green chemistry principles, the use of trichloroisocyanuric acid enables chlorination without chlorine or other harmful or dangerous reagents.** Trichloroisocyanuric Acid products such as made by **Medentech**, are listed as NSF certified drinking water chemicals under NSF/ANSI 60. For more info contact us.

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AQUATABS™ IN-LINE CHLORINE Production, Dosing and Mixing Systems were Developed in THAILAND by our Qualified Engineers with 40+ YEARS OF EXPERIENCE in Water Treatment, in Close Cooperation with Specialists of the Manufacturers in IRELAND, and Available from Stock.

Unique, Automated, Adjustable Cl Dosing Solution (see picture above) with Capacities To 150 m³/Day Per Cartridge. Multiple Aquatabs Dispensers Can Be Arranged In Parallel For Larger Demand at Low Cost.

Dosing Between 0.1 – 5 ppm. Cartridges Last Up To 9,000 m³, Depending on Required Cl Concentration and Presence of Organics!

Installed after smartUF or Pump, the System is Always on Stand-By: No Water Demand, No (over)Dosing. Fail Safe. Water Meter Optional. Inspection of Left Product through Transparent Cartridge. Already in use in Cambodia, Indonesia, Philippines.

COMBINED with *smartUF*-MMU-SDE™ especially developed for Asia to produce safe drinking water from almost any river, pond or lake:
Safe Water from River to Tap.



smartUF is the trade name for a compact Ultrafiltration system of Dutch design by experts with > 40 years in UF-applications worldwide.

Available from stock in Thailand in capacities from 500- 6,000 l/h with fully automatic backwash, lowest power requirement (can run on solar). Works on 6 V DC from phone charger.

Safe, Plug-and-Play, No skills Required. No Demand, No Power Use.

Installed in 15 Countries, incl. ASEAN

For more info: www.enviro-pure.nl

contact@enviro-pure.asia
or phone: + 66 806990742

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