



# Providing an Affordable & Environmentally Friendly On-Site Medical Waste Treatment Solution



# Providing a Cutting-Edge On-Site Solution for Medical Waste Treatment

Envomed has created an innovative on-site Medical Waste treatment solution, which is developed by Maabarot Metal Works Ltd., a company with extensive technical knowledge and over 30 years' experience in providing specialized industrial machinery. Understanding the market's need, we underwent an intensive R&D to produce a revolutionary solution for medical waste treatment from an economic, safety and environmental perspective.

## Safe, Effective & Environmentally Friendly

### What is Medical Waste?

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**Approx 80% General Waste**

**Approx 20% Hazardous, Infectious & Toxic**

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Medical waste is defined by the World Health Organization (WHO) as all forms of waste generated by health care facilities. Out of all of the medical waste generated 15-20% of this waste is considered to be potentially infectious and hazardous, with over 260,000 HIV infections and 21 million HEPA B infections being contracted by insufficient management of this waste alone. Existing methods of medical waste treatment are leaving a heavy mark behind, both economically and environmentally.

The World Health Organization estimates that:

- 21 Million HEPA B virus infection
- 2 Million HEPA C virus infection
- 260,000 HIV virus infection

Envomed 80



Sharps

Infectious



Pathological



Radioactive



pharmaceutical

# Envomed 80 - An Innovative Technology Expanding Safety for the Environment

A revolutionary in-house solution that shreds and sterilizes medical waste, eliminating the need for storage, transportation and incineration. The final product is a liquid phase that can be sent down the regular drainage system and a lower volume shredded waste, that can go to the regular municipality waste.



1  
Input Hazardous Waste

2  
Shredding

3  
Mixing & Sterilization

4  
Separation & Output



## A Powerful Four Shaft Erosion Free Shredder

- ✓ Efficiency
- ✓ Durability
- ✓ Low wear & tear



# Biocetic - How does it work?

As part of our solution, once the waste has been shredded, it goes through a sterilization process while being rigorously agitated. This process has been intensively studied and with years of research and development we have established the ultimate solution, eliminating resistant bacterial spores and sterilizes to STAATT level IV. The residue liquid is nontoxic and can be safely discharge down the regular drainage system.

We call it 'Biocetic' - which is based on the known powerful sporocide Peracetic Acid (PAA).

## Biocidal Effect of PAA in 40°C Temperature of action

Kill times (in minutes) according to the suspension method of DLG with  $10^7$  -  $10^8$  CFU / ml in the initial inoculum

Application concentration (%) as PAA 100%	0.01	0.025
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### Time it takes for sterilization

#### Gram-Positive Bacteria

Staph. aureus	1	0.5
Strept. faecalis	1	0.5

#### Gram-negative Bacteria

Enterobacter aerogenes	1	0.5
Ps. aeruginosa	1	0.5
Salmonella types	1	1

#### Yeasts

Sacch. cerevisiae	1	0.5
Cand. mycoderma	3	1

#### Molds

Penicilium camerunese	3	1
Asp. niger	10	5
Mucor spec.	3	1

#### Sporulators

Bac. cereus	1	0.5
Bac. subtilis	1	0.5

#### Bac. mesentericus

Thermophile sporulators	1	0.5
Clostridium perfringens	1	0.5

Source: major PAA producer



## Backed by engineering excellence

With our global headquarters in Israel and a network of distributors all over the world, Envomed has a truly global outlook.

Building on Israel's reputation for driving engineering excellence, Envomed is backed by over 30 years of experience and engineering know-how gained by Maabarot Metal Works Ltd.

In fact, the technology behind the Envomed 80 has already been approved by the Israeli Ministry of Health.

Following its debut at the world's largest medical trade-fair, MEDICA, in 2019, Envomed will continue to be present at all major medical tradeshows around the world - be sure to pay us a visit!

# Envomed – Increasing Productivity & Saving you Money

In just under 15 minutes, the Envomed 80 sterilizes to STAATT level IV, reducing waste volume by up to 80%.



Envomed 80 - demonstrating the automatic use of Biocetic in the machine for sterilization of Medical Waste.

## Envomed 80 - Typical Treated Waste Volume per Machine(s) according to Number of Beds

No. of Envomed 80 Machines	Waste Volume Treated	Estimated No. of beds
x1	Up to 250 kg per day	500
x2	Up to 500 kg per day	1000
x3	Up to 750 kg per day	1500

\*1 shift per day may vary according to Medical Waste Mix

Shredding  
with 80% volume  
reduction

Sterilizing

Send to the regular  
municipality waste

# STAATT Recommendations & Good Treatment Practice

Sterilization is internationally accepted to be defined as "the probability of a single viable microorganism occurring on and/or in a system after sterilization"\*. When analyzing the elimination of microorganisms from a system, it is acceptable to examine efficacy in terms of log reduction achieved by the process.

\* Source: Sean Moran. *Sterilization and disinfection. In: Engineering science of water treatment unit operations, 2018.*

## STAATT IV

Inactivation of vegetative bacteria, fungi and lipophilic or hydrophilic virus, parasites and Mycobacteria at 6log<sub>10</sub> reduction or greater, and an inactivation of B. Stearothermophilus spores at a 6log<sub>10</sub> reduction or greater

Reference Bacterial Strain	Reduction Rate
<i>Geobacillus Stearothermophilus</i>	> 6log <sub>10</sub>

## GTP & Performance Monitoring

At Envomed, safety is our top priority.

We understand the importance of routine monitoring and the integrity of the sterilization process results. Often, this comes at high costs and complexity, so we have developed a 'Good Treatment Practice' (GTP) system, which provides a cost effective solution on-site, allowing you the ability to monitor performance and have peace of mind.

### Biological and Chemical Indicators

In order to carry out routine inspection of the performance of the sterilization process, Envomed can provide kits containing biological indicators recommended by the STAATT. The kit contains 10<sup>6</sup> *Geobacillus Stearothermophilus* bacterial spores, allowing for routine tests in compliance with STAATT level IV sterilization recommendations, without the need for an external laboratory.

Envomed also provides "Reactive ink" indicators for frequent monitoring of PAA concentration and the entire process parameters.



# Envomed Model 80 Specifications

## Unit dimensions

Dimensions	1670 X 785 X 1450mm (WxDxH)
Weight	860 kg

## Ambient operation conditions

Temperature	5°C to 40°C
Humidity	30% to 70% Noncondensed

## Solid/Liquid separator dimensions

Dimensions	1000 X 780 X 1930 (WxDxH)
Weight	170 kg
Dimensions	700 X 630 X 470 (WxDxH) *
Weight	46 kg *

\* Manual unit option

## Raw waste compartment dimensions

Dimensions	430 X 600 (WxD)
Waste capacity per cycle	80 liters

## Connection requirements (power)

Voltage (imbedded water heater)	380-400 Vac + N + G, 50 (60) Hz, 32 (A)
Voltage (External water heater)	380-400 Vac + N + G, 50 (60) Hz, 16 (A)

## Connection requirements (water, drain and compressed air )

Water connection	¾ BSP
Water Input temp range	10 to 40 °C
Water Input temp (external heater option)	43 °C
Mean water flow rate	≥6 l/min
Drain connection	2"
Compressed air connection	¼"
Compressed air pressure	6-10 bar

\* Drinking water quality, min. 2.5 bar static pressure.

## Functional data per cycle

Duration of cycle	Typically 15-20 minutes
Effectiveness	<b>STAATT level IV</b>
Power consumption per cycle	0.9 kW/h

## Accreditation & Certification

Technology approved by the Israeli MOH
CE: IEC61010_1, EN61010-1, Low voltage (LVD) Directive 2014/35/EU
EMC certification EN 61326-1:13, Class A
ISO 9001:2015, RoHS Compliant



# Be Part of the Solution



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