waterMaze
WATER TREATMENT SYSTEMS

# BioPuck HC

## Remedy for Smelly, Oily Collection Pits

***An Enviro-Safe Solution for Oily Collection Pits***

***Converts Hydrocarbons to Water and $CO_2$***

***1 Puck Per Month for 1,000-Gallon Pit***

***Works in Water Temperature of 41° to 113°F***

## *Award-Winning Product for Use in All Pits*

Water Maze's BioPuck HC (Hydrocarbon) is an easy and effective way to dramatically reduce oil and other hydrocarbons in a wash-water collection pit or oil-water separator.

Simply drop a puck into the oily water and the bacteria goes to work consuming the hydrocarbons and oily waste, thus reducing the disposal frequency and fees usually associated with oil-water separators and collection pits.

**HOW MANY PUCKS YOU'LL NEED**

| Pit Size (Gallons) | Pucks Per Month | Applied How Often |
|---|---|---|
| 1 - 1000 | 1 | 1 Each Month |
| 1000 - 2500 | 2 | 1 Every 2 Weeks |
| Over 2500 | 3 | 1 Every 10 Days |

Designed to complement the entire line of Water Maze wash-water treatment systems, the BioPuck HC is a slow-release tablet that delivers a constant supply of bacteria for as much as a month in a pit of up to 1,000 gallons in volume. (Note: It may take as much as a month to visually see a difference.)

The all-natural, environmentally friendly BioPucks consist of a special blend of non-pathogenic and non-toxic bacteria for typical wash-water applications. These bacteria actually break down and metabolize the hydrocarbons as they accumulate in the oil-water separator. There are no hazardous by-products as the bacteria reduce hydrocarbons to carbon dioxide and water.


***The Bio-Puck HC comes in a box of 20 pucks or a 4-puck package (above) with four containment nets and a BioNutrient additive***

## HOW SAFE IS THE BIO-PUCK HC?

The BioPuck HC was formulated with efficiency and safety in mind. The bacteria utilized in this product are classified by the American Type Culture Collection (ATCC) as Class 1 organisms.

Class 1 organisms are defined as:

1. Naturally Occurring: natural bacteria, endemic to earth, not genetically engineered;
2. Non-Pathogenic: will not cause disease;
3. Non-Opportunistic: will not cause disease in a compromised host.

All Water Maze bioremediation products are routinely tested and are guaranteed to be salmonella-free.

## CONDITIONS FOR OPTIMUM OPERATION

- Temperature: working range 5°C-45°C (41°F–113°F); optimum range 28°C (82.4°F)
- pH: working range 6.5 - 8.5; optimum range 7.0 – 7.5
- Nutrients: Nitrogen 50-100 ppm
- Phosphorous: 50-100 ppm
- BioPuck HC Is Especially Effective in Degrading:

| | |
|---|---|
| Hydrocarbons | Lubricating Oil |
| Gasoline | Crude Oil |
| Diesel | Paraffin |
| Jet Fuel | And others… |
| Motor Oil | |
| Heating Oil | |

# BioPuck HC

## *Environmentally Safe and Simple Remedy for Oily, Smelly Collection Pits*

***Only 1 Puck per Month per 1,000 Gallons | Hydrocarbons Converted to Water and $CO_2$ | Works in 41° to 113°F Water***

## BIO-PUCK HC'S EFFECTIVENESS

Each BioPuck HC contains roughly the equivalent of 2.5 gallons of liquefied bacteria. The following are case studies of how well the BioPuck and comparable HC liquid products have worked:

■ **Vehicle Repair Shop:** A repair shop for a fleet of 29 vehicles in East Boston, MA, was discharging from a 200 gal. oil/water separator. The Total Petroleum Hydrocarbons (TPH) level was 33,940 mg/L, far exceeding the max. level of 100 mg/L and costing the company $16,000 per year with the extra fees. HC was injected daily and within 120 days the TPH level was reduced to 79 mg/L slashing the sewer costs to $1,200 per year!

■ **Equipment Rental Company:** The wash-water pit of a rental company in the Northeast had 4 inches of floating oil in the pit. Also the company was hauling a drum a month of oil. Within a week of dropping in a BioPuck, the oil was down to droplets and the maintenance chief was ecstatic: "I'll save hours in pit cleaning!"

■ **Solid Waste Facility:** A solid waste maintenance yard in Phoenix, AZ, had a flow of 7,000 gallons per day of wastewater, costing $7,000 in sewer surcharges plus $600 per month to pump the oil-water separator. After injecting HC the TPH level dropped from 180 to 23.3 mg/L within 90 days for estimated savings of $7,600 per year.

■ **Heavy Equipment Dealer:** A BioPuck was introduced to the collection pit of a Bobcat dealer in Cape Cod, MA. The pit had 2 inches of floating oil with an inch of emulsified oil underneath. Within three weeks the floating oil was down to less than 1/8-inch of floating oil and the emulsified oil was down by half.

## LAB ANALYSIS OF THE BIO-PUCK HC

Below are results from a bench scale bioremediation evaluation using a liquid version of the BioPuck HC on a contaminated groundwater sample over a two-month period *(measured in Parts Per Million — PPM).*

| Volatiles | 0 Days | 10 Days | 26 Days | 59 Days |
|---|---|---|---|---|
| Vinyl chloride | 0.770 | *BDL | BDL | BDL |
| Methylene Chloride | 417.388 | 140.030 | 1.963 | 0.048 |
| Acetone | 129.942 | 44.720 | 2.161 | 0.543 |
| 1,1-Dichloroethylene | 20.064 | 6.448 | BDL | BDL |
| 1,1-Dichloroethane | 7.168 | 2.550 | 0.390 | 0.065 |
| trans,cis 1,2 Dichloroethane | 1.380 | 0.682 | 0.135 | BDL |
| Chloroform | 2.280 | BDL | 0.480 | 1.513 |
| 1,2 Dichlorethane | 134.388 | 51.200 | 0.696 | 0.014 |
| 1,1,1 Trichloroethane | 78.494 | 26.350 | 0.511 | 0.098 |
| Carbon Tetrachloride | 0.000 | BDL | BDL | BDL |
| Bromodichloromethane | 15.832 | 5.346 | BDL | BDL |
| Trichloroethylene | 29.772 | 11.660 | 0.204 | 0.065 |
| Benzene | 14.096 | 5.290 | BDL | 0.036 |
| Bromoform | 12.506 | 9.836 | 12.539 | 0.066 |
| 1,1,2,2-Tetrachlorethane | 6.262 | BDL | 2.229 | BDL |
| Methylisobutylketone | 21.318 | 9.286 | 0.950 | 0.037 |
| Perchloroethylene | 0.966 | BDL | BDL | 0.027 |
| Toluene | 47.122 | 13.374 | 0.100 | 0.109 |
| Chlorobenzene | 0.000 | BDL | BDL | 0.163 |
| Ethylbenzene | 0.946 | 0.330 | 0.076 | 0.043 |
| Xylenes, Ortho, Para | 0.492 | 0.260 | 0.021 | 0.026 |

** BDL = Below Detectable Levels*

## *These Are the Elements That Must Be Present for Bioremediation to be Effective*

- **Energy:** Hydrocarbons act as an energy source.
- **Carbon:** Hydrocarbons in the waste stream also serve as the carbon source. Carbon is needed for proteins, DNA, RNA and cell walls.
- **Oxygen:** Very important! Four pounds of oxygen is required for each pound of hydrocarbon.
- **Nitrogen:** Needed for amino acids, proteins, DNA, RNA and cell walls.
- **Phosphate:** Needed for DNA, RNA and energy reactions.
- **Minerals:** The bacteria use some of the same minerals you'd typically find in a multi-vitamin pill or supplement.

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*8.914-120.0 Effective 7/07 800-535-0941 Fax: 800-535-9164 info@wmaze.com*