

Dealing with ship generated liquid oily and solid waste (garbage)

Meeting with the Stakeholders, Zagreb, 23. 09. 2009

Minimum criteria for the PRF system (technical and economical)

- ✓ The PRF system should ensure an effective **protection of the environment** (i.e. prevent transfer of pollution from sea to land)
- ✓ It should be based upon **best available techniques**
- ✓ It should be **efficient** in operational sense
- ✓ It should be **cost effective**

Oily liquid waste treatment techniques

TECHNOLOGY	FREE OIL	EMULSIONS (Mech. Formed)	Chem. stable EMULSIONS (oil in water)	Chem. stable EMULSIONS (w/o + s.s.)
API separator	++	-	--	--
Hydro cyclone	++	-	--	--
Plate coalescer	++	++	-	-
Filter coalescer	+	++	-	-
IAF	++	+	-	-
Chem. treatment + IAF	++	++	+	+
DAF	++	+	+/-	+/-
Chem. treatment + DAF	++	++	++	++
Membrane filtration	++	++	++	+
Decanter centrifuge + chem.	+	+	++	++
Disc Bowl centrifuge + chem.	+	+	++	++

The best techniques - criteria

The technologies were evaluated on the basis of the following criteria:

- Proven technology
- Low effluent oil content
- Low maintenance
- Low utilities consumption
- Low space requirements
- Low investment costs

The evaluation took into consideration the efficiency of free oil removal and removal of emulsified oil.

The best techniques

According to these criteria the best techniques are:

- **PLATE COALESCER**, for free oil removal
- **DISSOLVED AIR FLOTATION** including **CHEMICAL TREATMENT**, for emulsified oil removal



County Waste Management Centres

- Acceptance, treatment of sorted and unsorted waste
- Collection of reusable or recyclable waste and collection and further transferring of hazardous waste
- Collection and treatment of waste that may be used for other purposes
- Energy recovery of certain waste fractions
- Disposal (depositing of) treated waste

MECHANICAL BIOLOGICAL TREATMENT

Mechanical Biological Treatment

Specific goals:

- Maximising quantities of **recyclable raw material** (glass, plastics, paper, etc.)
- **Composting**
- Production of **energy-rich refuse-derived fuel (RDF)** of defined properties
- Production of **biologically stable material** that can be landfilled
- Production of **biogas** to be used for heat/electricity generation