



AIRPORT ENVIRONMENTAL MANAGEMENT

04-08 October 2015

Abu Dhabi, UAE

**Module 10: Wastes Generation,
Reduction and Treatment**

Module objectives

- Review the drivers for action to minimise wastes (solid / liquid)
- Identify different sources of wastes arising from the operation of airports
- Highlight the approach to waste management (the waste hierarchy)
- Discuss the implications of waste manage for airport sustainability.

Drivers for action

- Sustainable development.
- Regulation.
- Operating costs.
- Corporate responsibility.



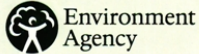
Sustainable development

- The Earth's resources are limited.
- Economic growth - greater consumption of resources and production of wastes - a trend that is unsustainable.
- Over 99% of materials extracted from the Earth become waste within 6 weeks.



Regulation

- EU Case Study
- 'Duty of Care'.
- Special Wastes regulations.
- Regulations for food handling.
- Producer Waste (packaging) regulation.
- Landfill directive.


 Environment Agency

CERTIFICATE OF REGISTRATION UNDER THE CONTROL OF
POLLUTION (AMENDMENT) ACT 1989

Regulation Authority
Name: E A National Customer Contact Centre
Address: Environment Agency
The Quadrant 2
99 Parkway Avenue, Sheffield
Post Code: S9 4WG
Tel: 08708 506 506 Telex: Fax:

The following information is hereby certified by the above-mentioned authority to be information which at the date of this certificate¹ is entered in the register which they maintain under regulation 3 of the Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations 1991:-

Name(s) of registered carrier: Maxitech Biz Ltd.
Registration number: CB/GNS412ES (Previously known as TNE/377389)
Business name (if any): Maxitech Biz Ltd.
Address of registered carrier's principal place of business: Unit A10, The Chocolate Factory
5 Clarendon Road
London
N22 6XJ
Tel: 087019 95010 Telex: Fax: 087078 79410
Date of registration: 14/08/2009
Date of expiry of registration*: 13/08/2012
Date of which last amendment (if any) was made to the carrier's entry in the register: 14/08/2009

 Signature of authorised officer of the regulation authority: *Mutton* Date: 06/07/2009
(See over) 060838

Operating costs

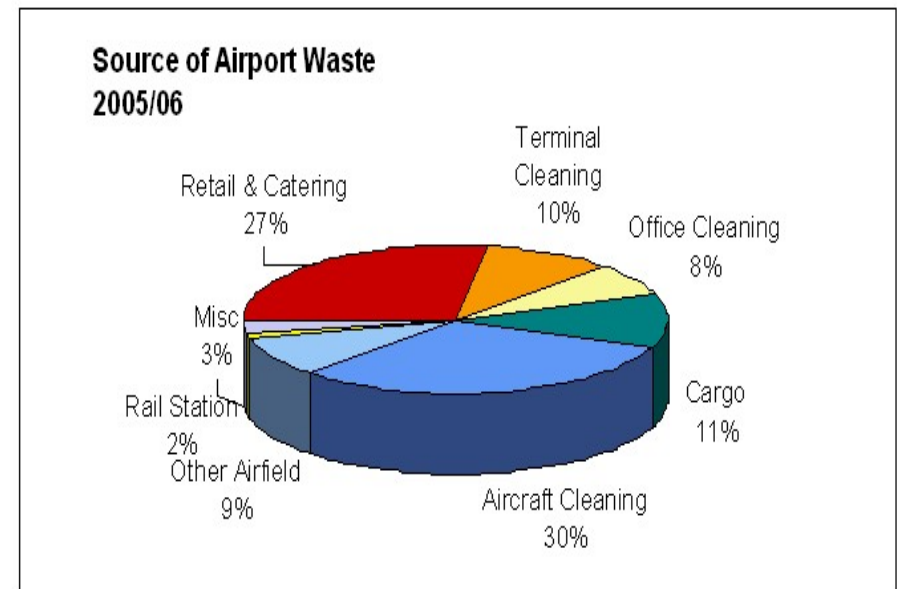
- Waste materials, if properly segregated and handled, are resources that have an economic value.
- The process of handling wastes has significant financial implications for airport operators and their service partners.
- A properly structured waste management programme can save money and natural resources whilst delivering the same customer service

Managing solid wastes



Source of airport wastes

- Terminal catering and retail.
- Airline catering.
- Maintenance activities.
- Aircraft cleaning.
- Cargo handling.
- Office cleaning.
- Landscape management.



Types of waste arising

- Glass
- Paper
- Wood
- Metals
- Clinical wastes
- Food materials
- Classified 'special' wastes



Types of waste from different activities

Type	Offices	Catering	Retail	Engineering Maintenance
Paper / card	XXX	X	XX	X
Food	X	XXX	X	X
Electronics Equipment	X		X	X
Chemical/ Special		X	X	XXX

Exercise: Priorities and stakeholders

In order to reduce waste from terminal activities you as environmental manager must identify all the stakeholders involved in/with an interest in waste generation:

- Who are the stakeholders
- Which have most influence over current activities
- What data will you need to track progress against any waste reduction target?

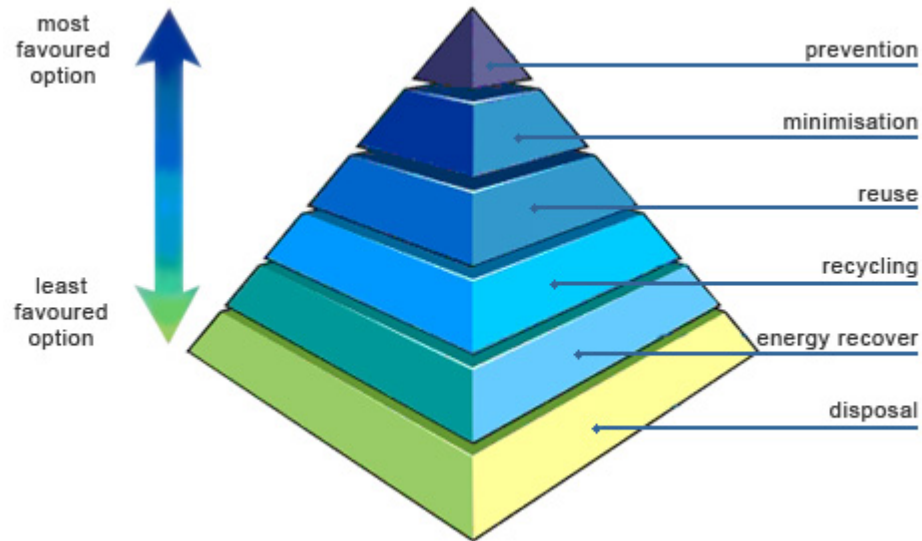
Management system

- Site Wide Waste Management System

- Airport lead:
 - Strategy.
 - Coordination.
 - Management system.
 - Monitoring and reporting.
 - Waste handling / disposal contract.
 - Waste audit.

- Collaborative Environmental Management
 - Allocation of responsibility: to service partners
 - airport, airlines, handling agents, maintenance, retail.

The waste management hierarchy



Reduction at source

- Minimisation at the point of purchase through the Supply Chain
- Purchasing policies – contracts with suppliers
- Purchasing practices – bulk purchases



Materials segregation

- Segregation of allows recycling contracts rather than waste collection
- Infrastructure implications
- Contracts with tenants/ service providers can be used to promote



Materials segregation

- Key to enabling reuse, composting, waste to energy, recycling,
- At key locations - terminals, offices, aprons, onboard aircraft.
- Required engagement of staff and passengers.



Challenges

- Collaboration with service partners
- Awareness Building / motivation.
- Air/land boundary.
- Self bring systems.
- Weighing systems.
- Charging
- Enforcement (supervisor)



Waste to energy

- Infrastructure costs
- Can create reliance upon wastes
- Some airports import waste for CHP



Potential wastes targets

- Performance targets adopted by airports could include:
 - X% reduction in wastes for disposal by 20XX.
 - Zero growth in the weight of wastes arising from 20XX.
 - Zero export from raw waste materials from site by 20XX

Liquid wastes – water pollution



Drivers for action

- Landlord responsibility.
 - Regulatory requirements (fines).
 - Clean up costs.
 - Health concerns (pollution of aquifers).
 - Insurance implications.
 - Implications for airport sale.
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- These pressures are particularly acute in 'dry' countries.

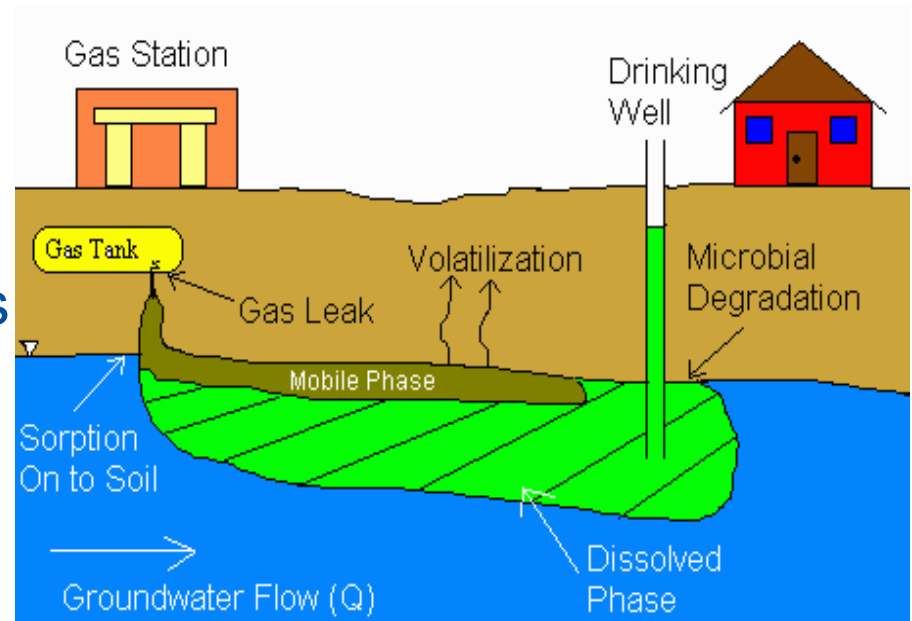
Surface water contamination

- Causes death of plants and animals in rivers
- Can take many years and considerable cost to 'repair'.
- Health impacts where water abstracted.
- Subject to regulatory controls, limits, fines



Ground water contamination

- Critical in areas of water shortage
- Protection of aquifers
 - community/health concerns
 - clean up costs.
- Examples:
 - Tucson – aquifer flushing.
 - Copenhagen – soil farming
 - London Heathrow – recycling Jet A1



Principles of management

- Different service partners have different impacts
- Airport a central role in coordinating EMS
- Collaborative environmental management
- Collaborative decision making

Sources of pollution: Operations

- Vehicle and aircraft washing:
 - washing stands, chemicals used, management practices.
 - detergents, oils, solids, carbon residues, heavy metals.
- Maintenance:
 - runway rubber removal
 - oils, paint stripping chemicals, kerosene, solvents.
- Agricultural activities:
 - fertilisers, pesticides, herbicides.



Sources of pollution: Winter operations

De-icing and anti-icing:

- Runway and taxiway de-icing.
 - chemicals used.
 - forecasting (weather, friction testing).
 - quantities used.
 - areas treated
- Operational practices.
 - De-icing lances – MAN.
 - De-icing stands – CDG.
 - Infrared de-icing – USA.



Sources of pollution: Fire training

- Emergency Services:
 - oil and fire fighting foams.
 - fire training areas

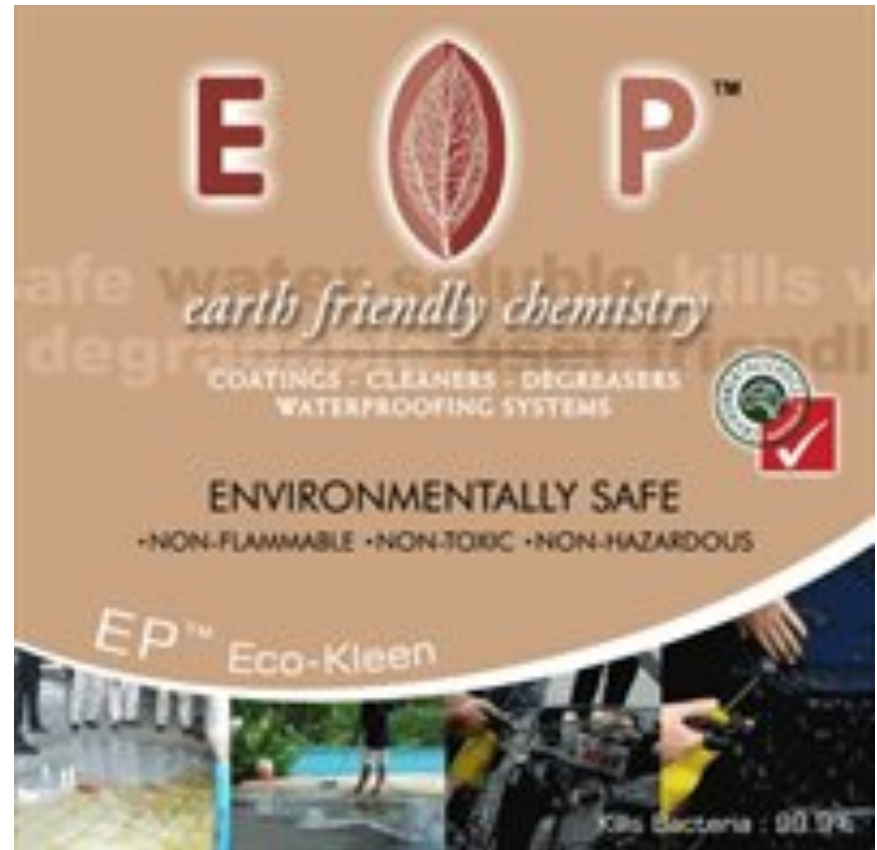


Solutions: Operational practices

- Selection of appropriate materials
- Strict handling procedures
- Spill response procedures

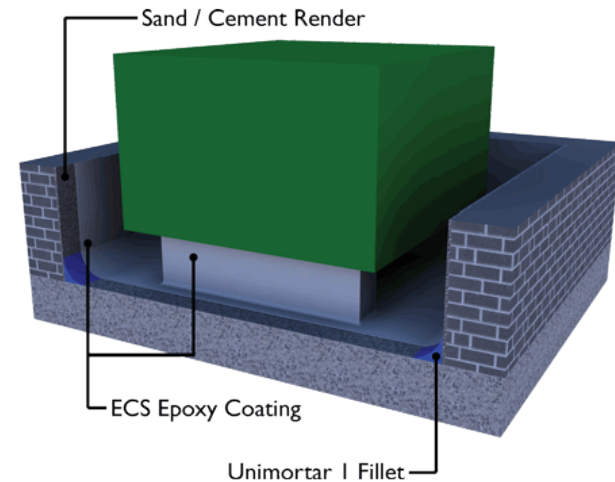
Materials used

- Low impact products
- Use according to instructions
- Just in time use
- Alternatives to using chemicals



Operational practices

- Strict storage and handling procedures
- Specific, clear and well documented handling procedures
- Training, awareness building, motivation



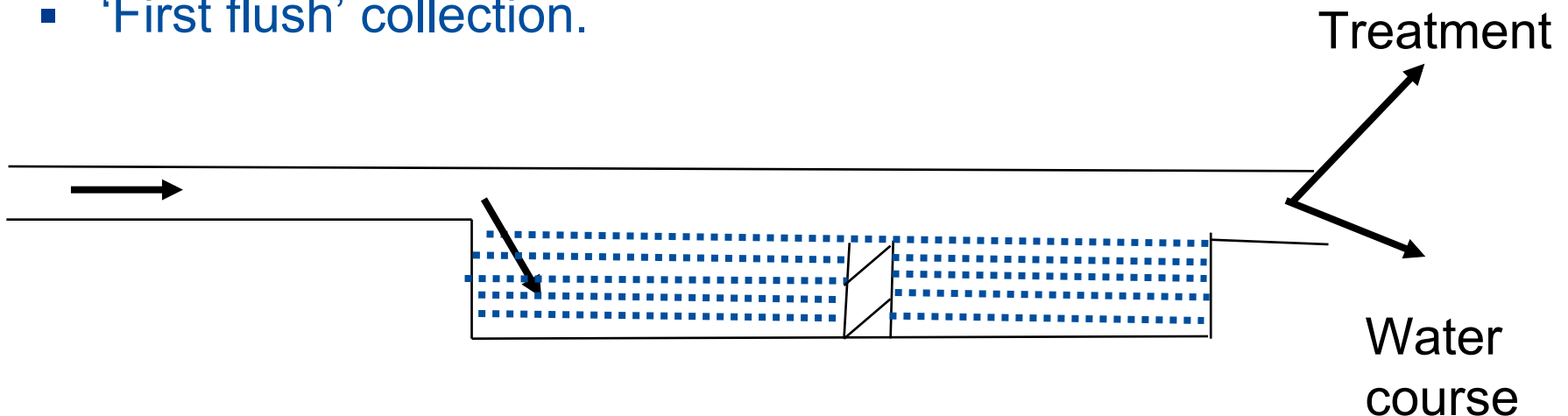
Spill response to accidents

- Fuel and Chemical Spillage:
 - toxic chemicals.
 - accidents and poorly maintained equipment.
- Emergency plans and maintenance programmes.
- Major role for Airport Fire Service



Drainage infrastructure

- Catchment areas feed underground drainage system.
- Settlement tanks.
- 'First flush' collection.



- Automatic monitoring and flow diversion:
 - rivers.
 - mains drains

Diversion to mains drainage

- Many airports divert 'dirty' water into the mains sewerage system for treatment off site.
- Many chemical pollutants from airport activities not appropriate for such an approach so pre-treatment on site may be necessary.
- Significant costs for reserving capacity within the mains system for airport use.
- More cost effective/sustainable 'on site' treatment methods may be appropriate.

Water recycling

- Water recycling plants can process waste water for reuse
- Not all pollutants can be handled
- Financial implications.



‘Sustainable’ solutions

- Surface water runoff from hard standing through ‘natural’ clean up systems.
 - Microbes ‘seeded’ onto crumbled car tyres.
 - Reed beds.



Summary

- Minimise use of chemicals
- Strict handling and spill response procedures
- Infrastructure design
- Training and motivation
- Site wide approach

Any questions?