



Household Hazardous Waste Management in Western Cape



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Presentation outline

- Background
- Objectives
- Project phasing
- Survey results
- Assessment methodology
- Findings of feasibility study
- Pilot HHW collection day
- Communication
- Types of waste accepted
- Findings of pilot HHW collection day

Project Background

- Household Hazardous Waste (HHW) currently being co disposed with general waste on general waste management facilities:
 - Single household generates little HHW but in city of more that 3 mil people - become a big problem
 - Rural areas landfills are not lined – creating a big risk of leaching into ground water
 - Problem complex to solve and therefore ignored by authorities and communities
 - No separate collection & disposal systems for HHW
 - Poor & vulnerable mostly effected
- Provincial Hazardous Waste Plan (PHWMP):
 - Id 7 priority waste types
 - home based health care waste
 - fluorescent tubes (incl CFLs)
 - batteries
 - paints & solvents
 - pesticides & insecticides
 - electronic waste (e-waste)
 - motor oil
 - Requires urgent intervention



Project Background - cont

- **DANIDA UEM Programme financially supported implementation PHWMP:**
 - Good fit - aims of UEM Programme
 - Feasibility study to identify and assess options to separate HHW from general waste
 - Options to be assessed in dynamics communities of Western Cape and local conditions



Project objectives

- Determine feasibility of separating HHW from general waste
- Through cooperative governance, to inform WC municipalities of the best options to manage HHW
- Id sustainable comprehensive solutions for the successful diversion of HHW from the general household waste stream :
 - Collection
 - Material reclamation,
 - Recycling
 - Treatment & disposal
- Create awareness, educate and obtain buy-in from stakeholders
- Ensure the feasibility of the solution from financial and legislative perspective



Project phasing

- Phase 1:
 - Project Inception – initial meetings and introductions

- Phase 2:
 - Desktop Study and Surveys

- Phase 3:
 - Feasibility Study

- Phase 4:
 - Pilot HHW collection day

Survey Results

- Municipal Questionnaire:
 - Sent out to all 30 WC municipalities and received back 8 (27%)
 - Municipalities acknowledge HHW to be a problem that needs to be addressed
 - Increase public requests for local solutions
 - **Key challenges:**
 - Lack of suitable infrastructure - drop off and transfer facilities
 - Lack of specialised HHW management services
 - Lack of financial and human resources
 - **Further practical hurdles:**
 - Transport costs - long distances to an appropriate landfill site
 - Lack of knowledge to characterise the HHW and disposal

Survey Results - cont

■ Responses to Public HHW Survey Questionnaires:

- CoCT - 117 responses across socio-economic spectrum
- Rural municipalities
 - George and Central Karoo - 19 responses

■ Findings

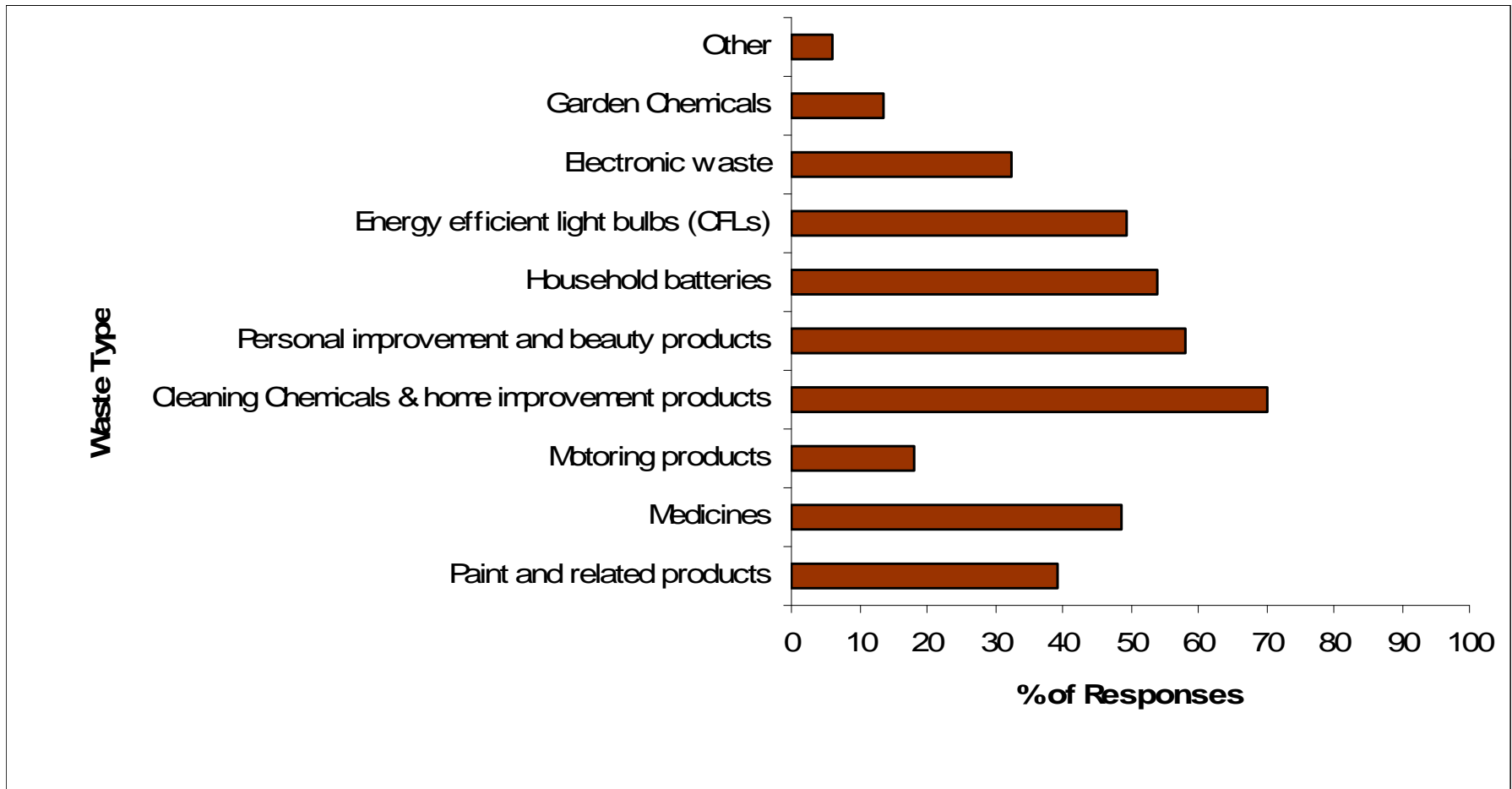
- Majority of respondents expressed “in principle” interest and willingness to embrace and support a dedicated local HHW management programme
- Such services to be provided at no extra cost
- Convenience and security of future public drop off sites/serves is imperative



Survey Results - cont

- Need for continuous education throughout the economic spectrum – dangers of HHW
- Education to contain practical information about existing HHW separation and management programmes
- Growing public knowledge HHW management

Prevalent Types of HHW generated by respondents to questionnaires

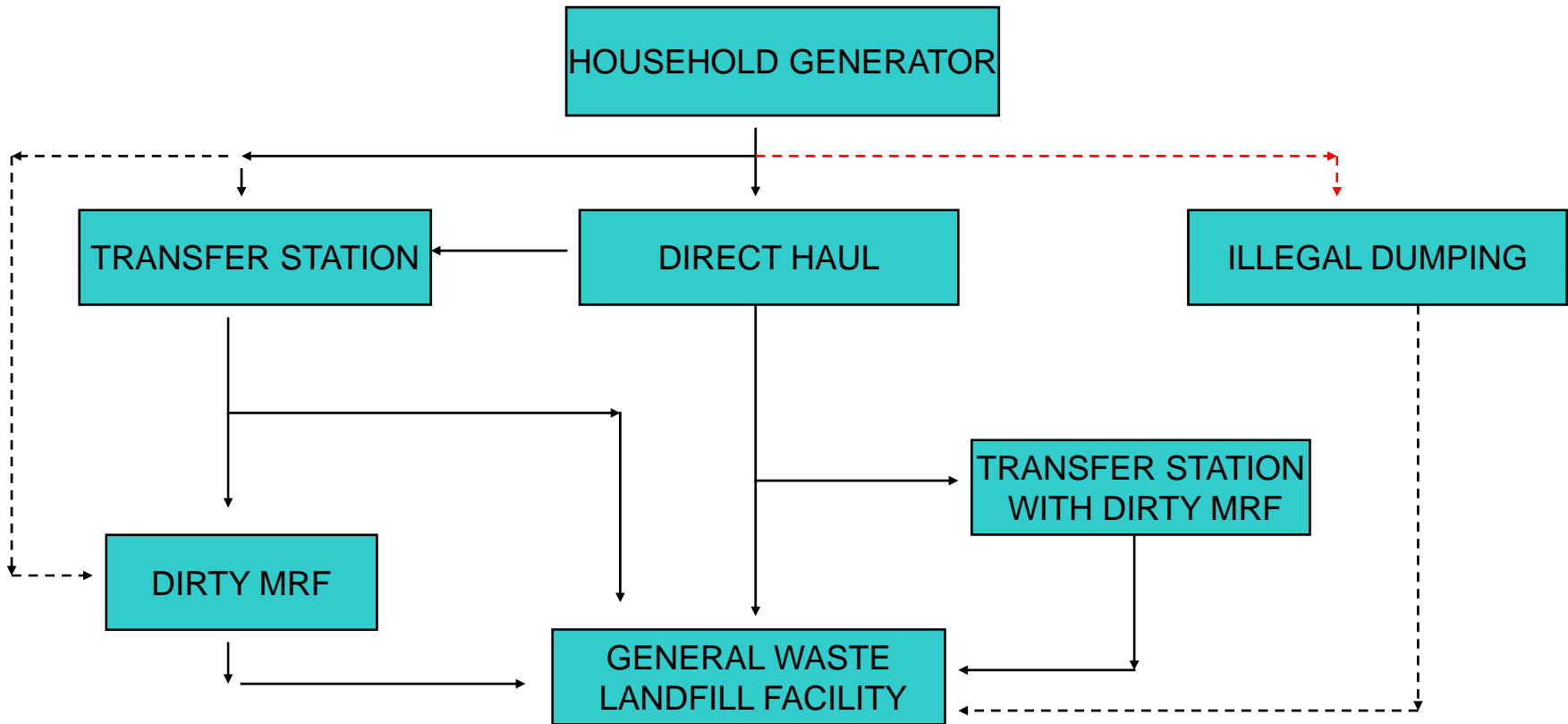




Assessment methodology

- Waste management review
 - Current HHW waste management practices
 - Capacity and operation of existing waste management infrastructure
 - Characteristics of HHW stream

Existing approaches to managing HHW



- Between 0 – 8% of waste going to general waste management facilities in WC
- No separation of HHW



Assessment methodology - cont

- Id of options

- In id of options taken into consideration the following nat and prov:

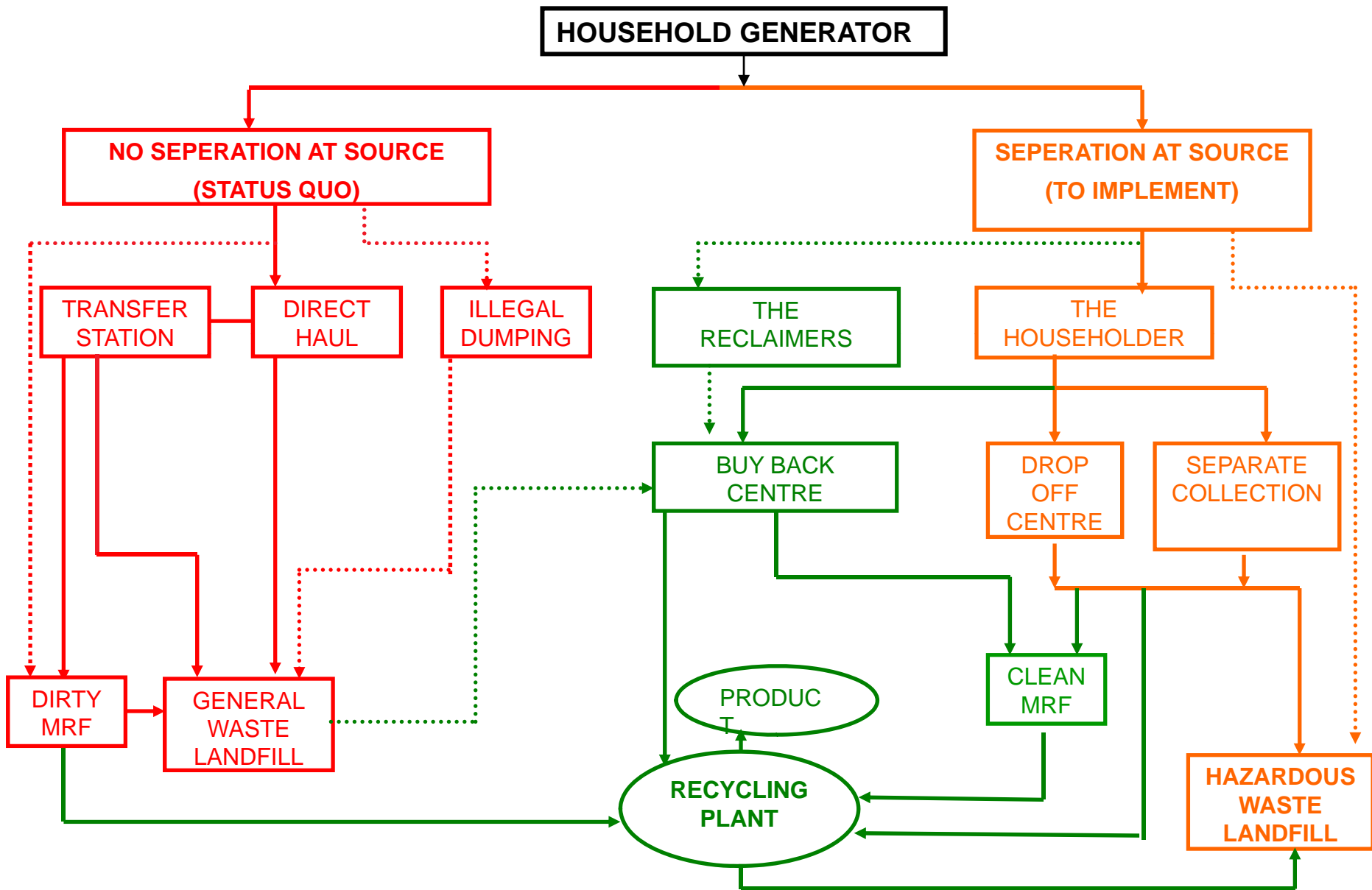
- Objectives, initiatives and legislation

- Existing waste management arrangements

Table 18: The plausible HHW waste alternatives

ALT	START	Status Quo INTERMEDIATE STEPS			END POINT	
1	Household Generator	Direct Haul			General Landfill Site	
2	Household Generator	Direct Haul	Transfer Station		General Landfill Site	
3	Household Generator	Direct Haul	Transfer Station	Dirty MRF*	General Landfill Site	
4	Household Generator	Direct Haul	Dirty MRF		General Landfill Site	
5	Household Generator	Illegal Dumping			General Landfill Site	
ALT.	START	Short term intervention INTERMEDIATE STEPS			END POINT	
6	Household Generator	Separate collection			Hazardous Landfill Site	
7	Household Generator	Own transport	Drop off centre		Hazardous Landfill Site	
8	Household Generator	Own transport			Hazardous Landfill Site	
ALT	START	Medium term intervention INTERM STEPS			END POINT	
9	Salvager Separation	Own transport	Buy back centres	Recycling plant	Product	
10	Salvager Separation	Own transport	Buy back centres	Clean MRF	Recycling Plant	Product
11	Household Separation	Own transport	Buy back centres	Recycling plant	Product	
12	Household Separation	Own transport	Buy back centres	Clean MRF	Recycling Plant	Product
13	Household Separation	Own transport	Drop off centre	Recycling Plant	Product	
14	Household Separation	Own transport	Drop-off centres	Clean MRF	Recycling Plant	Product
15	Household Separation	Separate Collection	Drop off centre	Recycling Plant	Product	
16	Household Separation	Separate Collection	Drop off centre	Clean MRF*	Recycling Plant	Product

Logic Diagram for HHW Management





Assessment methodology - cont

- Assessment of options (rating & ranking)
 - Environmental
 - Social
 - Economical
 - Practical

Scoring Results

Ranking according to following criteria:

- Practicability
- Aesthetics
- Public Acceptance
- Access Ability
- Risk
- Cost

Resulting Score:
Chance of Success

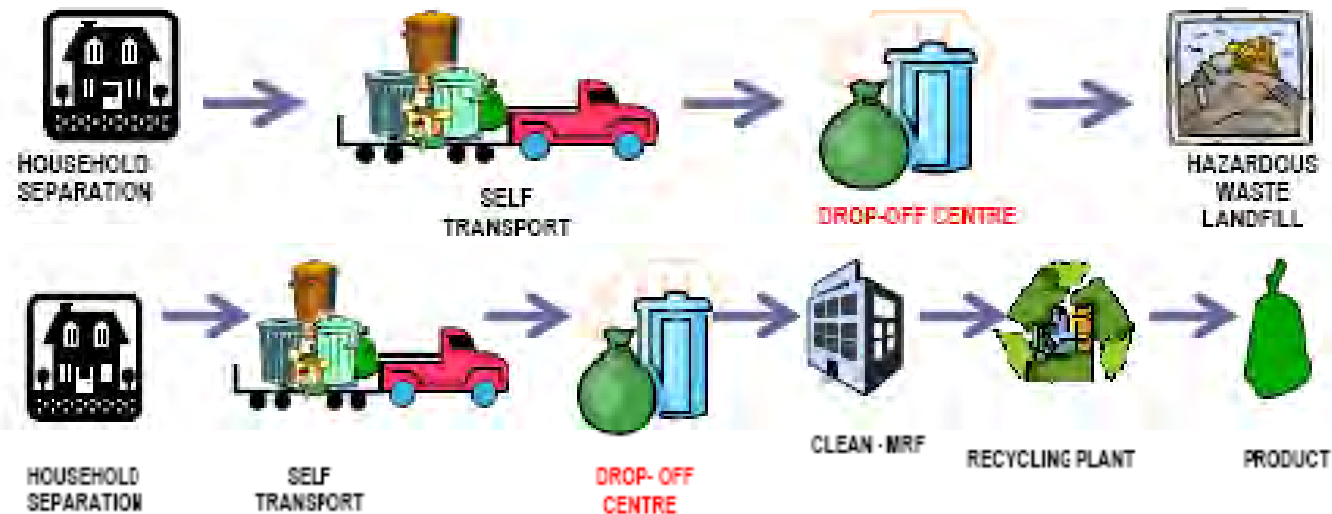
ALTERNATIVE	DESCRIPTION
URBAN HIGH INCOME	
SHORT TERM	INTERIM ENDPOINT, HAZARDOUS WASTE LANDFILL
Top ranked Alternative	1. Retail outlet drop-off centres
Second ranked Alternative	2. Mobile collection points
MEDIUM TERM	ENDPOINT, RECYCLING PLANT WITH OR WITHOUT C/MRF
Top ranked Alternative	1. Retail outlet drop-off centres
Second ranked Alternative	2. Mobile collection points
URBAN LOW INCOME	
SHORT TERM	INTERIM ENDPOINT, HAZARDOUS WASTE
Top ranked Alternative	1. Mobile collection points
Second ranked Alternative	2. Retail outlet drop-off centres
MEDIUM TERM	ENDPOINT, RECYCLING PLANT WITH OR WITHOUT C/MRF
Top ranked Alternative	1. Mobile collection points
Second ranked Alternative	2. Retail outlet drop-off centres
RURAL	
SHORT TERM	INTERIM ENDPOINT, HAZARDOUS WASTE
Top ranked Alternative	1. Mobile collection points
Second ranked Alternative	2. Retail outlet drop-off centres
MEDIUM TERM	ENDPOINT, RECYCLING PLANT WITH OR WITHOUT C/MRF
Top ranked Alternative	1. Mobile collection points
	2. Retail outlet drop-off centre

Clarification of Definitions

Drop-off Centres	Retail Outlet drop-off centres
	Shopping Mall drop-off centres
	Twenty four hour operation drop-off centres
	Buy back centres
	Drop-off centres at Municipal Facilities: <ul style="list-style-type: none">- Free garden refuse sites- Other civic amenities- Depots
	Mobile Collection Points

Findings

- Two preferred solution options remain (one short term and one medium-long term)



- Rating & ranking id drops-offs most suitable options for implementation

Findings - cont

- Retail drop-off centers and mobile drop-off points most feasible options
 - Retail drop-offs most favoured by urban high income group
 - Mobile drop-off points most favoured by urban low income and rural areas
- In general short term solutions scored higher than medium term solutions because of capital cost of recycling facilities and MRF's
- Study workshopped with municipalities – although study provided alternatives:
 - Complex for municipalities to deal with – limited resources and lack of political will
- Risks associated with retail drop-off centers and mobile drop-off points warrant further investigation:
 - Varies according location and waste type
 - Previously trigger NEMA & ECA – list of activities under Waste Act
- Provisions in Waste Act:
 - Priority waste
 - EPR
- Further work needed to be done on costing the options and to lobby politicians and industry support

Pilot HHW Collection Day

- Objectives:
 - Raise the communities' awareness about HHW, possible health and safety implications and the appropriate means of treatment and disposal of such waste;
 - To provide a platform from which to collect, remove and safely treat and dispose of HHW which would otherwise ultimately end up in normal household waste and as such be disposed of at a general waste landfill facility;
 - To pilot the safe collection of HHW from household respondents.
 - Enabled authorities to learn and develop solutions for the safe collection and disposal of HHW.
 - Data be used for long-term projects which would focus on reuse and recycling of HHW
- HHW collection day 1st of kind in SA
- Took place on 1 March 08 in Stellenbosch on “Die Braak” in collaboration DEADP, DANIDA UEM Programme, Stellenbosch Municipality, industry and private sector.



Industry and private sector partners

- Kunakisani Waste Solutions: e-waste
- Nova Lighting: fluorescent tubes (including CFLs)
- The ROSE (Recycling Oil Saves the Environment) Foundation: used motor oil
- EnviroServe: chemicals - Hazmat spill and accident response service



Communication and awareness

- Communications methods used:
 - Newspaper articles
 - Local radio stations
 - Flyers and posters put up in the vicinity of “Die Braak”
 - Key message:
 - guide households on the nature and identification of HHW
 - how to become involved in reducing it
 - what types would be accepted for drop off.
 - “Educational fun event, suitable as an outing for the entire family.”
 - It included a specially designed logo - used as the official brand for future HHW collection initiatives in the Western Cape.
 - Communication started at a late stage, due time constraints and the first press release in the local newspaper was 10 days prior to the actual HHW Collection Day event.



*Ensure our future,
dispose responsibly.*

Let's *STOP* poisoning our environment

Free waste disposal!

Household Hazardous Waste Collection Day

Date: Saturday 1st March 2008

Time: 08h00 - 16h00

Venue: Die Braak

**c/o Bird & Alexander Streets
Stellenbosch CBD**

**Bring all that old paint, oil, batteries,
computers, etc. you've been storing.
Bring the whole family to learn more
about protecting our environment**

No medical waste or explosives will be accepted!

Sponsored by:



Environmental
Affairs



What can **YOU** do about **HHW**?

1. The best way to manage HHW is to avoid creating it. Select the least toxic product to do the job. Buy only as much as you need.
2. Is the product still usable? Give it away. A friend, neighbour, or community group such as Little League or Habitat for Humanity may be able to use it.
3. If the product isn't usable, or you can't give it away, contact the waste management division of your local municipality.
4. Do you have used motor oil or used oil filters? Contact the ROSE Foundation: (Tel: 021-445 7492)
5. Take spent lead acid batteries back to the place where you bought them. Dealers accept old car batteries when you buy new ones.
6. If your community doesn't have an HHW collection program, establish a community household hazardous waste collection and exchange programme where waste paints and solvents /pesticides etc. can be exchanged and used within the community. If you must throw the material away before the next collection, you may put it in your regular trash, PROVIDED:
 - a. You have complied with any disposal instructions on the label
 - b. There are no free-standing liquids. If water-based, allow the liquid to evaporate. If not water-based, absorb the liquid into vermiculite, cat litter, saw dust or other absorbent material.
 - c. You have carefully packaged any residue to prevent leakage while the material is being transported to a disposal facility.
 - d. You have only a small quantity. Divide larger quantities and dispose of them over several collection periods.



ENVIROSERV



For any further information, please contact:
Department of Environmental Affairs &
Development Planning

Directorate: Waste Management (DEADP)
Private Bag x 9086, Cape Town, 8000
Tel: (021) 483 2705 Fax (021) 483 2979



Ensure our future,
dispose responsibly.

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HOUSEHOLD HAZARDOUS WASTE (HHW)



What is HHW?

Every person generates a small amount of Household Hazardous Waste in their lifetime.

HHW includes old paint and paint-related products, pesticides, pool chemicals, drain cleaners, degreasers, car care products and other common household detergents and solvents.



HHW - Household Hazardous waste are Hazardous in nature as such it has the potential even in low concentrations to have a significant adverse effect on public health and the environment because of toxicological, chemical and physical characteristics.



*If careless managed,
HHW, can create environmental
and public health hazards*

* Households include free standing homes, apartment blocks, informal settlements, dormitories, hotels, crew quarters, campgrounds, picnic grounds and day-use recreation areas.

How can I identify HHW?

Generally, **HHW** materials belong to one of the following hazardous waste categories:



CORROSIVES Examples are drain cleaners, rust removers and oven cleaners. Corrosives have an extremely low or high pH and can burn skin and mucous membranes. Labels usually state, "**CORROSIVE-AVOID CONTACT WITH SKIN OR EYES.**"



FLAMMABLES Examples include gasoline, kerosene, fuel oil, butane, oil-based paints and paint thinners. Labels usually say, "**EXTREMELY FLAMMABLE-KEEP AWAY FROM ANY SOURCE OF IGNITION**" and "**HIGHLY FLAMMABLE-KEEP AWAY FROM FLAMES.**"



TOXIC MATERIALS Examples are benzene, cyanide compounds (found in rat fumigants), thallium sulfate (ant traps) and carbon tetrachloride (old fire extinguishers). Materials may be carcinogenic. Labels often contain the skull and crossbones and usually state, "**DANGER/POISON**" or "**WARNING-KEEP OUT OF REACH OF CHILDREN.**"



OXIDIZERS

These chemicals reacts strongly with other compounds and may cause fires or explosions. Examples include chlorinated pool chemicals, sodium hypochlorite (household bleach) and various peroxides. Labels usually say, "**WARNING-STRONG OXIDIZER.**"

AIR QUALITY HAZARDS

could cause excessive emissions or toxic ash problems at resource recovery facilities or incinerators. Examples include thermostats, paints that contain more than one percent by weight of heavy metals, products that contain significant amounts of volatile organic compounds (VOCs), and batteries-nickel, cadmium, lithium and lead acid.

WILDLIFE HAZARDS

Examples included old chlorinated pesticides such as DDT, chlordane, dieldrin, heptachlor, etc. Labels usually indicate the material presents a hazard to fish or wildlife. The material may be immediately toxic or accumulate in various tissues of the fish or animals. Of particular concern are those materials that are slow to degrade and tend to bio-accumulate.



UNKNOWNNS

Unidentified Materials such as those that contain no label or ingredient information-should be treated as though they belong to one of the above categories until proven otherwise.

Promotional items

- T-shirts, caps, pencil cases, headbands and key rings bearing the HHW logo and some basic information to the public





Pilot HHW Collection Day - cont

- Stellenbosch was an ideal venue for this pilot project:
 - Demographic structure comprised of low, medium and high income households with fair amounts of HHW
 - Good level of awareness and education
 - Previous experience blue bag project
 - Relatively small size and physical location
 - Remote enough from Cape Town to ensure that predominantly Stellenbosch residents use the drop off
 - still close enough to the Vissershok hazardous waste disposal site to make transport cost effective

HHW types accepted

- E-waste, namely redundant computers (excluding the larger white goods such as fridges as these would be logistically impractical)
- Household based paint and solvents
- Household based cleaners, pool chemicals and pesticides
- Used motor vehicle oils and lubricants
- Fluorescent tubes including CFLs
- Aerosols
- All types of batteries
- No medical waste, explosives, farming pesticides or any other industrial or commercial chemicals would be accepted.









Findings

- Event not well attended:
 - More attendees from middle to high income groups
 - Good environmental knowledge
 - Transport
- Small amount of HHW dropped of
- Communication started to late – longer lead time needed
- In general successful – lessons learned by everybody involved:
 - Is doable and provides an innovative short term solution for municipalities
 - Political and industry support needed to be successful
 - Timing, right day and location

