

Protocols for the Evaluation of BMW sent to Landfill by Pre-treatment Facilities

Presentation to EPA Waste Workshop 2009



Olivier Gaillot – Technical Director RPS

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Background

The EPA published the ***Guidance on Municipal Solid Waste Pre-treatment & Residual Waste Management*** in June 2009. The objective of the guidance is to assist the delivery of Ireland's obligations under a number of EU Directives (1996/61/EC, 1999/31/EC, 2006/12/EC) and to clarify the pre-treatment requirements for municipal waste for disposal at EPA licensed facilities.

As a continuation of the 2008 Waste Characterisation Work, the EPA commissioned RPS to develop a protocol which will provide acceptable evidence to determine **percentage of BMW in the MSW going to landfill.**

APPROACH

The work carried out comprised:

- International Literature Review of research papers and existing methodologies (UK and Germany).
- Preparation of draft protocols for evaluation of BMW in MSW sent to landfill.
- The methodology will be tested and validated by carrying out a number of field experiments at pre-treatment facilities.

Key Issues

- Diverse nature of Residual Municipal Solid Waste, which is affected by the recycling system.
- Range and fragmentation of pre-treatment options available.
- The constantly changing waste collection and management .
- Heterogeneous nature of waste (effect on sampling).
- Difficulty in measuring BMW content of MSW for non-stabilised residual waste.

Residual Waste



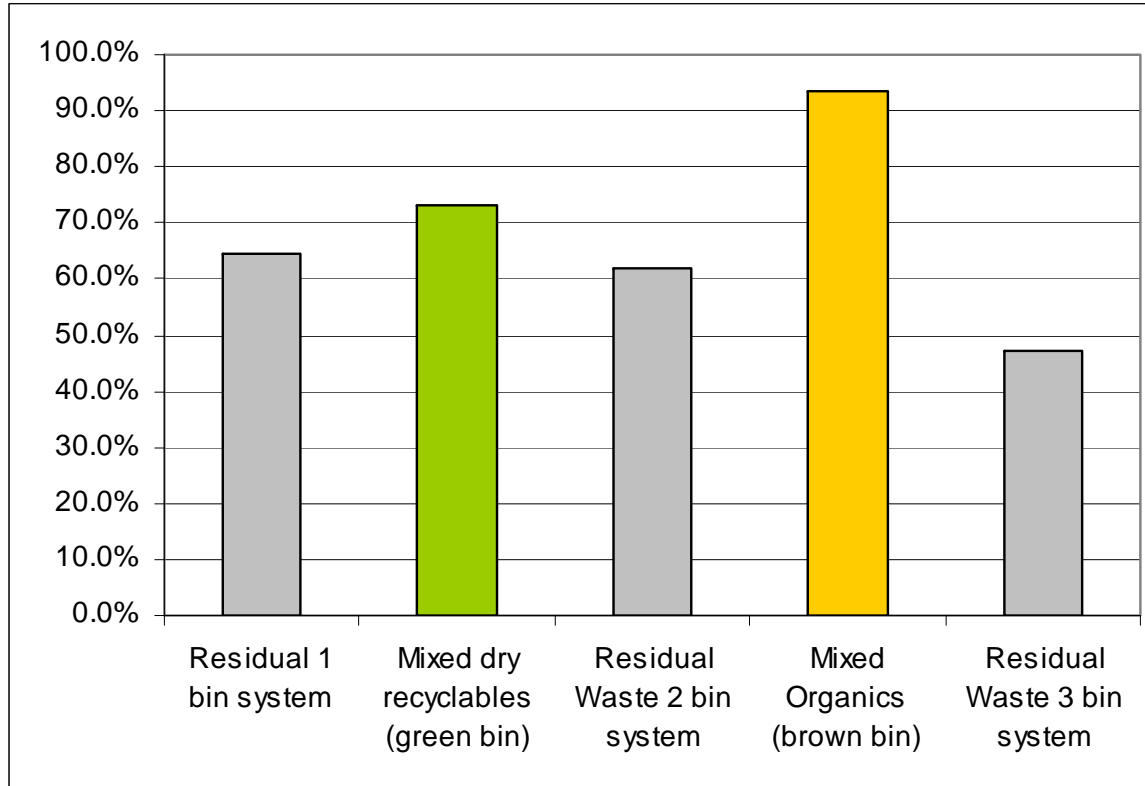
Residual Waste



What is BMW?

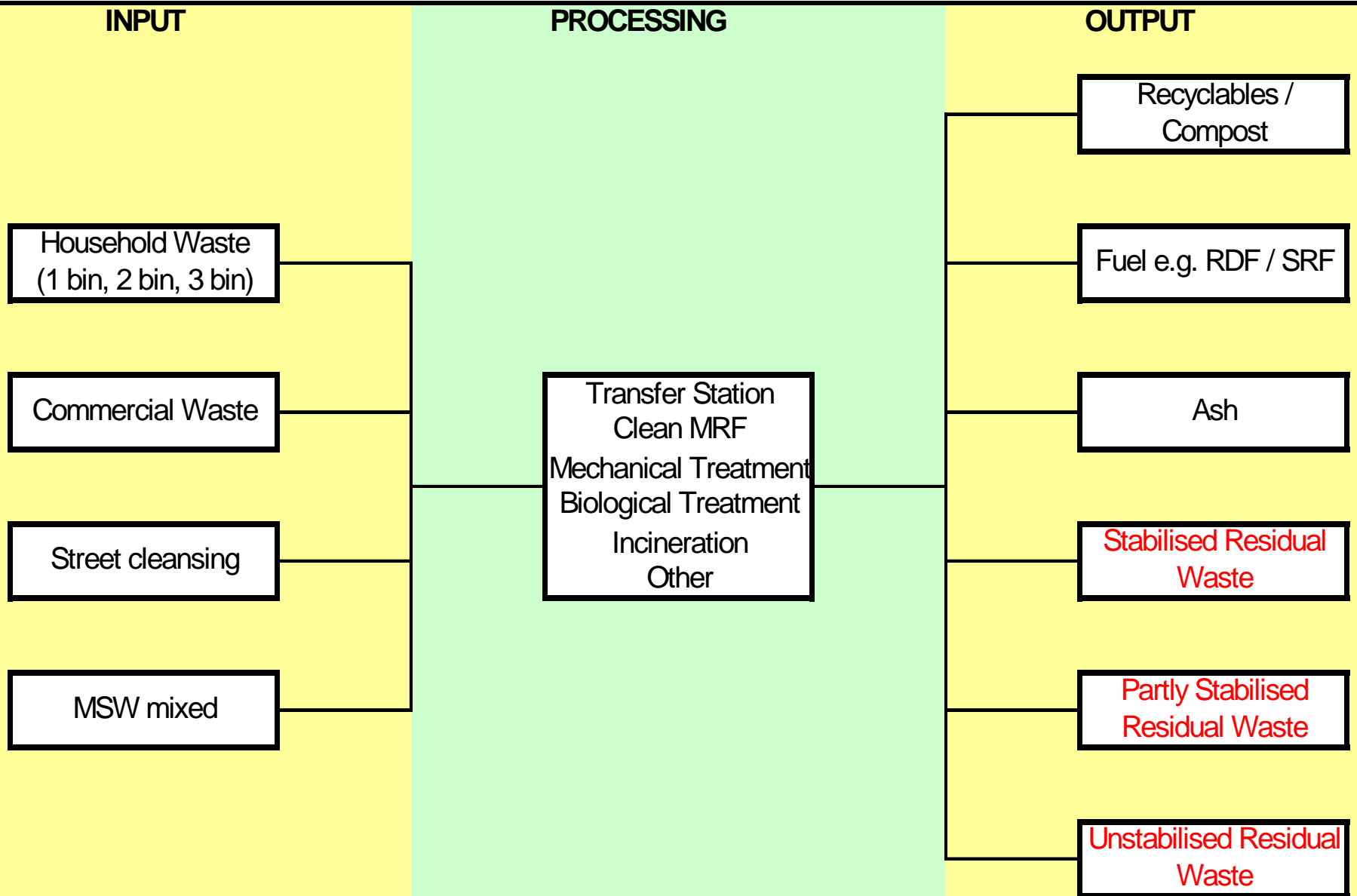
- Full BMW: organic, garden, paper, cardboard,
- Part BMW: wood, textiles , nappies, unclassified combustibles and fines,
- Non BMW: all other categories

Reminder on BMW content in Household Waste

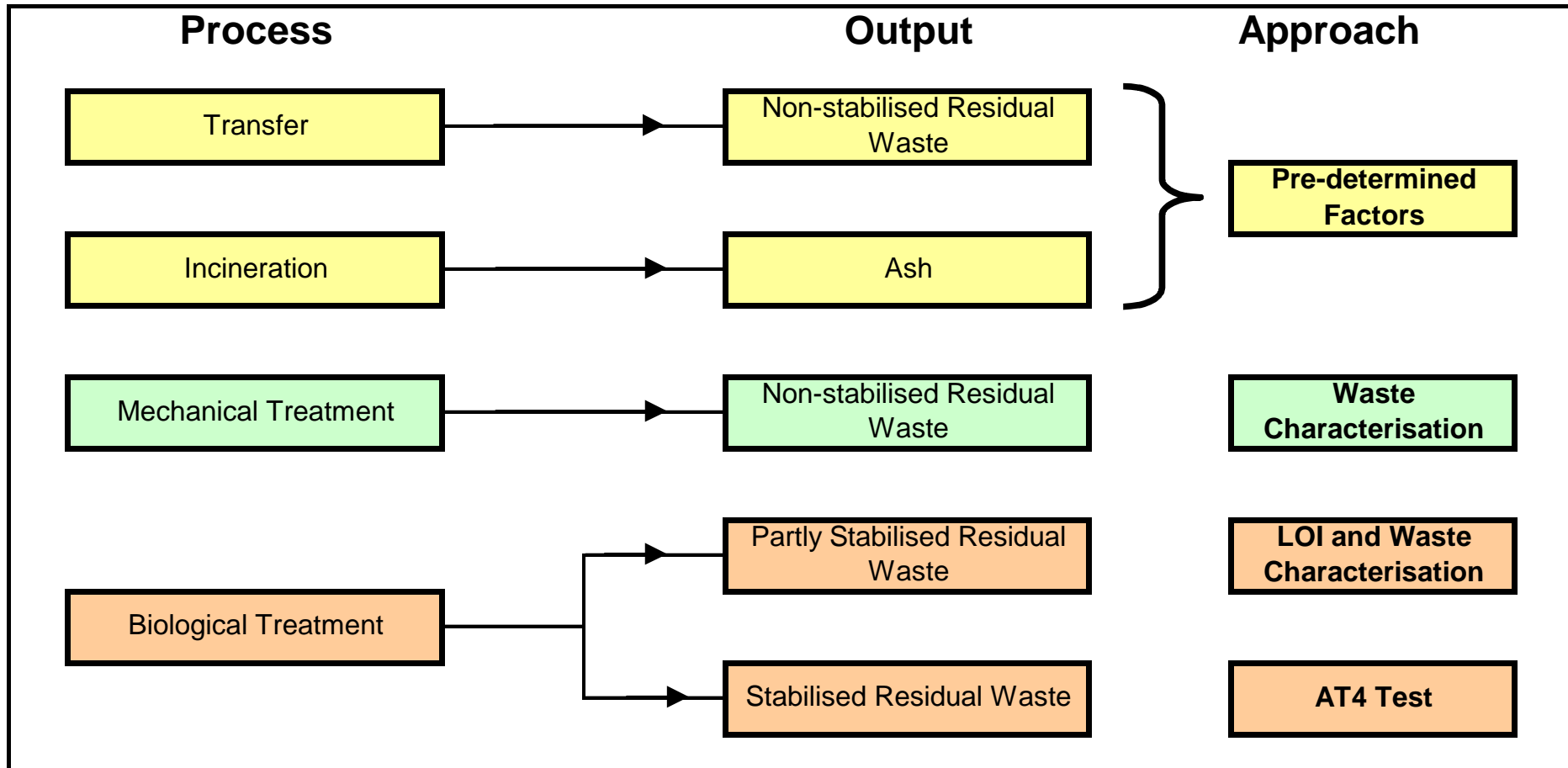


Source: EPA Waste Characterisation Survey 2008

Pre-treatment Facilities to be Monitored



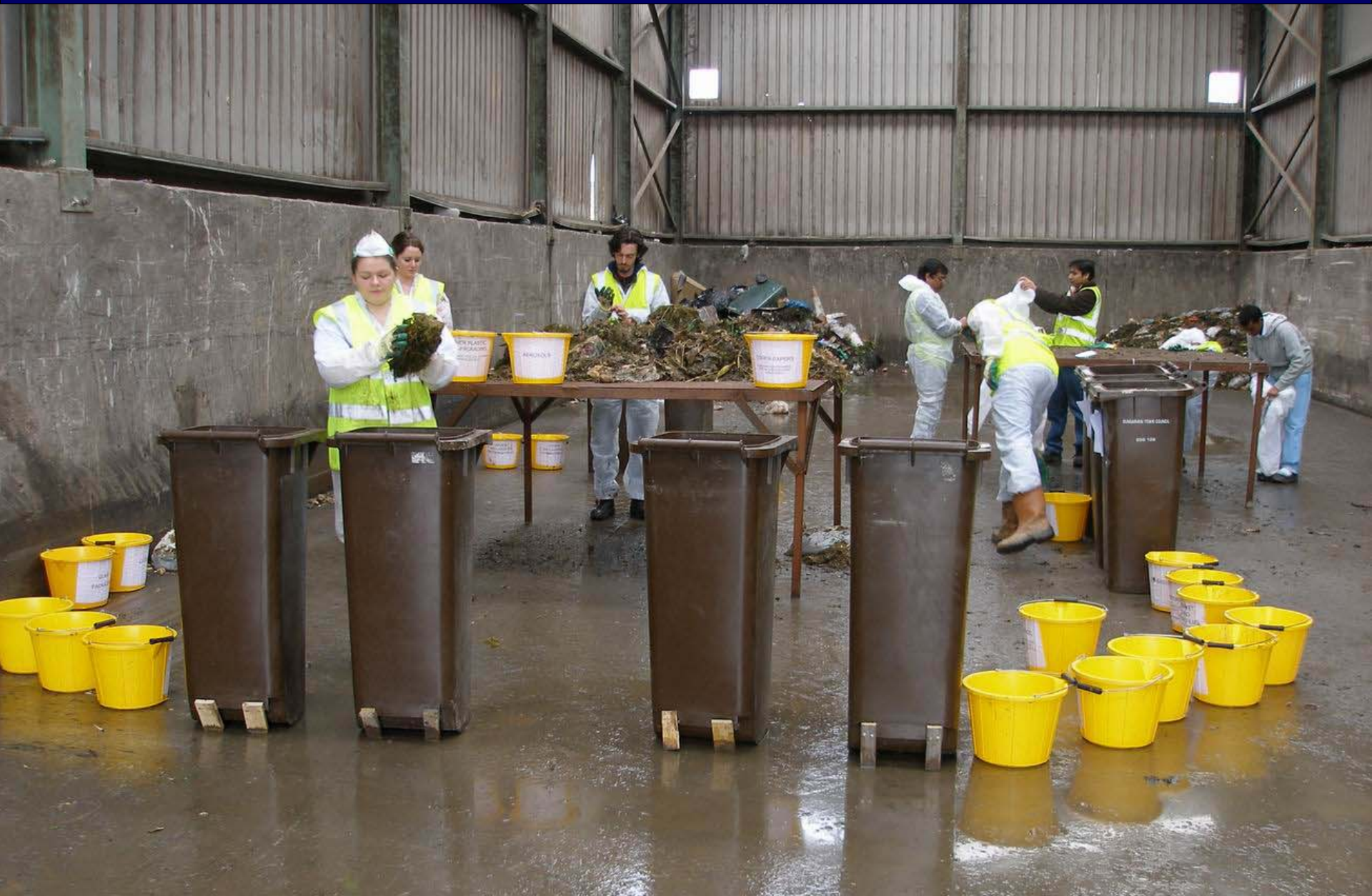
General Approach to BMW Assessment



Waste Characterisation - Mixing



Waste Characterisation - Sorting



Waste Characterisation – Record Weights & PPE



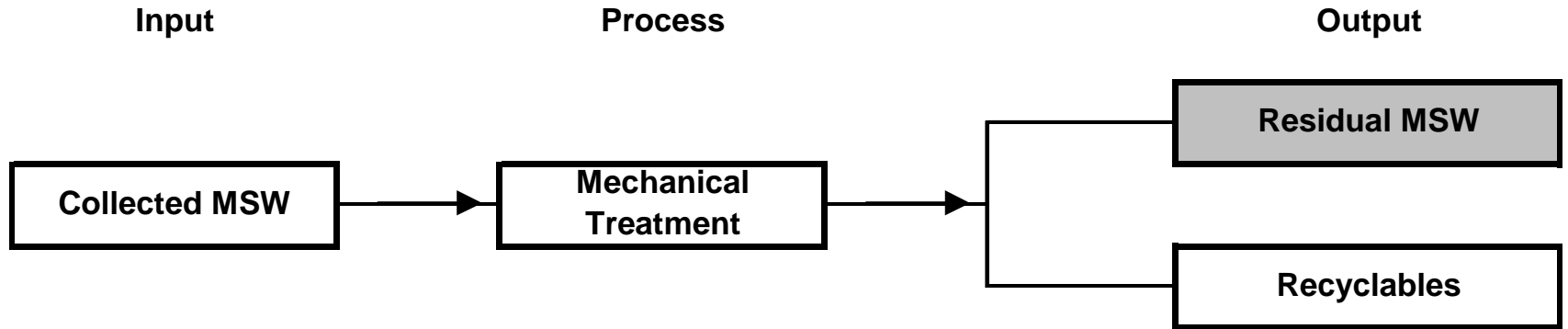
Transfer Station & Use of Pre-determined Factors



- This methodology is suitable for transfer stations where there is no mechanical treatment of waste
- Apply Pre-determined Factors (available from EPA Waste Characterisation Surveys – will be updated over time)

Collection System / Waste Type	Household Waste	Commercial Waste
Untreated / 1 bin	64.5%	77.2%
2 Bin	62.0%	75.2%
3 Bin	47.0%	

Estimating BMW Content of Outputs from Mechanical Treatment Facilities



This method is applicable to facilities where there is mechanical treatment of waste e.g. trommelling, magnets etc.

Estimating BMW Content of Outputs from Mechanical Treatment Facilities

- Collect background information on waste types accepted at facility
- Sample Planning and Survey Planning
 - Frequency: every quarter or every 5,000 tonnes of residual MSW sent to landfill
 - Composite Sample made of 15 grab samples collected over a week
 - Coning & quartering to obtain a 200 kg subset
- **Waste Characterisation** Survey execution (methodology and lists available from previous EPA surveys)
- Data analysis and reporting

Waste Characterisation - Sorting

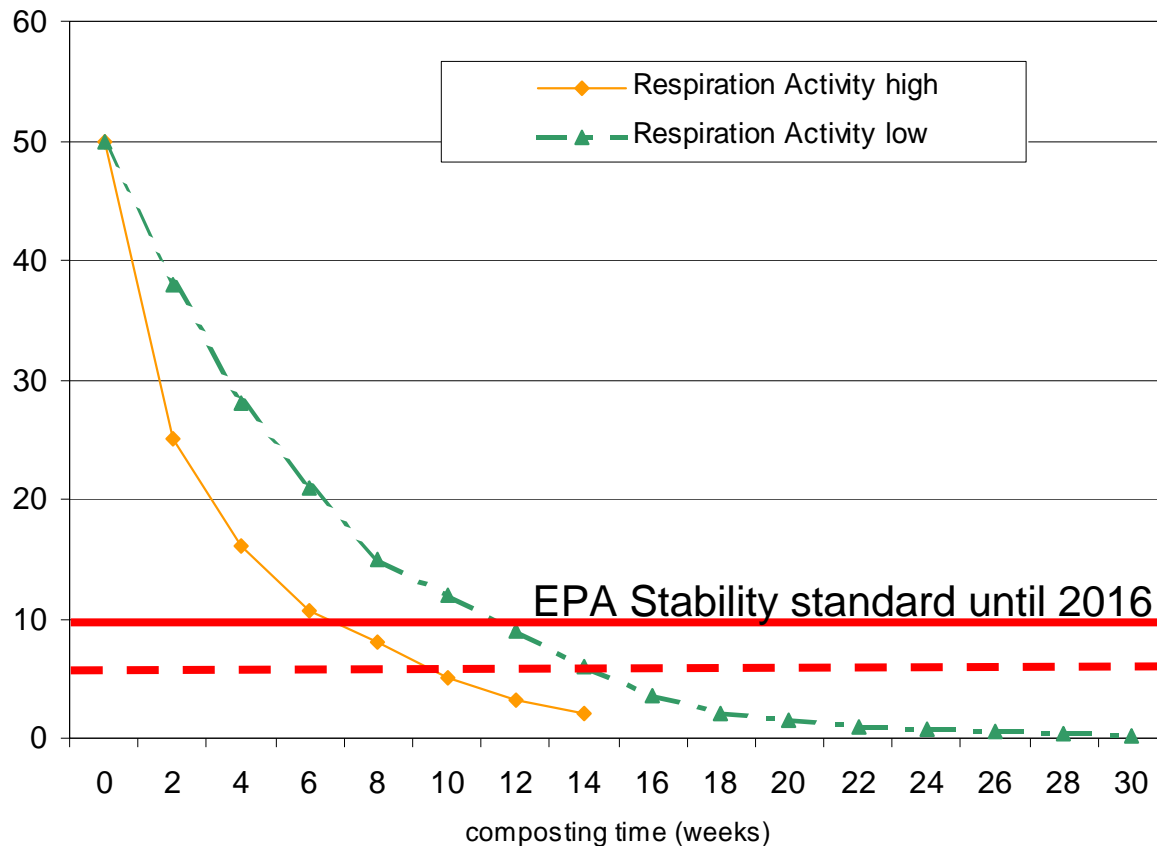


Stabilisation of Residual Waste/ Respiration Activity (AT_4)

- EPA Standard for stability means the reduction of the decomposition properties of waste to such an extent that offensive odours are minimised and that the respiration activity after four days (AT_4) is **<10 mg O₂/g DM (until 1-1-2016), and <7 mg O₂/g DM thereafter.**
- Respiration activity assesses the oxygen consumption of a sample after four days.
- Typical values of the AT_4 are in the range of **20 to 70 mg O₂/g** dry matter for untreated MSW.
- The Respiration Activity after four days (AT_4) is only suitable for the assessment of stabilised waste.

Effect of Biological Treatment on Respiration Activity

Respiration activity
 BOD_4 [mg O_2 /g DM]



EPA Stability standard
after 2016

Stabilised Residual Waste **likely** to meet EPA Standard

- Sample Planning and Survey Planning
 - Frequency: every 200 tonnes sent to landfill
 - Composite Sample made of ten, 5 kg incremental samples must be collected per batch
 - Coning and quartering to produce quantity required by lab
- Survey execution
- Data analysis and reporting
- **It is important to note that stabilised waste which meets the EPA standard for stabilisation i.e. $AT_4 < 10\text{mg O}_2/\text{g DM}$, will not be considered BMW.**

Stabilised Residual Waste **unlikely** to meet EPA Standard

- Possibly require a combination of waste composition surveys and other tests such as Loss on Ignition (LOI)
- Propose to validate how the BMW content of this waste stream is calculated by testing of samples.

Next Steps

- Publish draft protocols on EPA website shortly
- Submissions, consideration of submissions and finalise protocols
- Ongoing validation and testing of protocols

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