FOOTPRINT REDUCTION: STRATEGY AND FEEDBACK OF THE DUTCH HISTORICAL WASTE PROGRAM

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INTRODUCTION

OBJECTIVE OF THE HISTORICAL WASTE PROGRAM:

Transfer legacy waste from the Petten site to the storage facility in the south of the Netherlands

OPPORTUNITY:

Sorting the waste by activities to reduce footprint and storage costs

CONSTRAINTS AND CHALLENGES:

Characterization of the waste

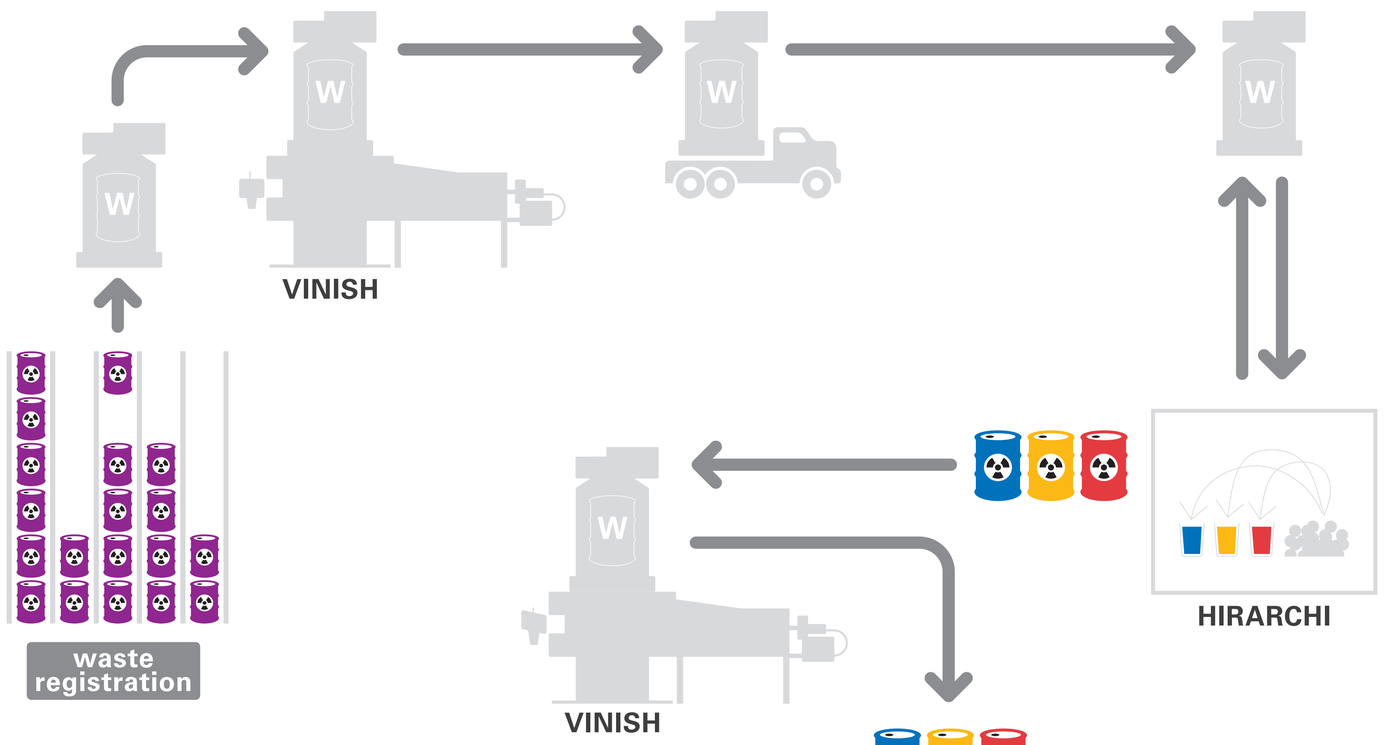
Estimation of nuclide content (required for both transport and storage)

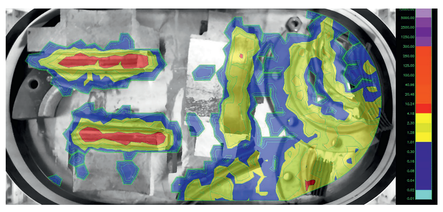
NRG PROJECT

1. Pre-sorting + nuclide vector

NUCLIDE VECTOR

H 3	6.90E-02
C 14	2.90
Si 32	8.89E-06
P 32	8.89E-06
Mn 53	1.75E-06
Fe 55	42.46
Co 60	1
Ni 59	14.60
Ni 63	1545
Zr 93	2.63E-07
Nb 93m	0.22
Nb 94	3.99E-05
Tc 99	5.07E-02





2. Sorting process by γ spectrometry based on Co-60 peak

3. High resolution γ measurement + combination of step 1 and 2

4. Transport to storage facility

FEEDBACK AND WAY FURTHER

STEP 1:

Nuclide vectors represent a good approach for a characterization of the waste, still it requires:

- Documented archives
- Reasonable assumptions
- Case-by-case approach

STEP 2:

Identification of waste inside the cell requires:

- Good background knowledge of the origin of the waste
- Additional tools to confirm the visual inspection
- Destructive experiments to confirm composition and nuclides contents
- Second peak (e.g., Cs-137) to cross-check results from calculation

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