

New procedures for disposal of ICSDs

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28 September 2015

 Sundhedsstyrelsen

National Institute of Radiation Protection

Facts on ICSD

High dose coefficient

ICSD = Ionisation chamber smoke detector

- Typical americium-241
 - ISO 2919 (sealed sources)
- Category 1: 37 kBq – 550 kBq
 - For industrial use
- Category 2: 37 kBq
 - For private use

Americium-241

- Alpha and gamma emitter
- Half life 432.7 years
- Exemption level $1 \cdot 10^4$
- 20 mSv $ALI_{\text{ingestion}} 1 \times 10^5$ Bq
- 20 mSv $ALI_{\text{inhalation}} 5.1 \times 10^2$ Bq

Import

In total ~ 5.5 mill. (5.1 mill. in cat. 2)

Import of ICSDs



Legislation today

National Board of Health order no. 154 of 6 March 1990 on smoke detectors and consumer products containing radioactive materials with amendments in orders no. 547 of 23 July 1993 and no. 793 of 19 October 1999.

§ 32

Smoke detectors of category 1 and 2 must not be disposed through incineration but must be returned to the deliver or send to Danish Decommissioning.

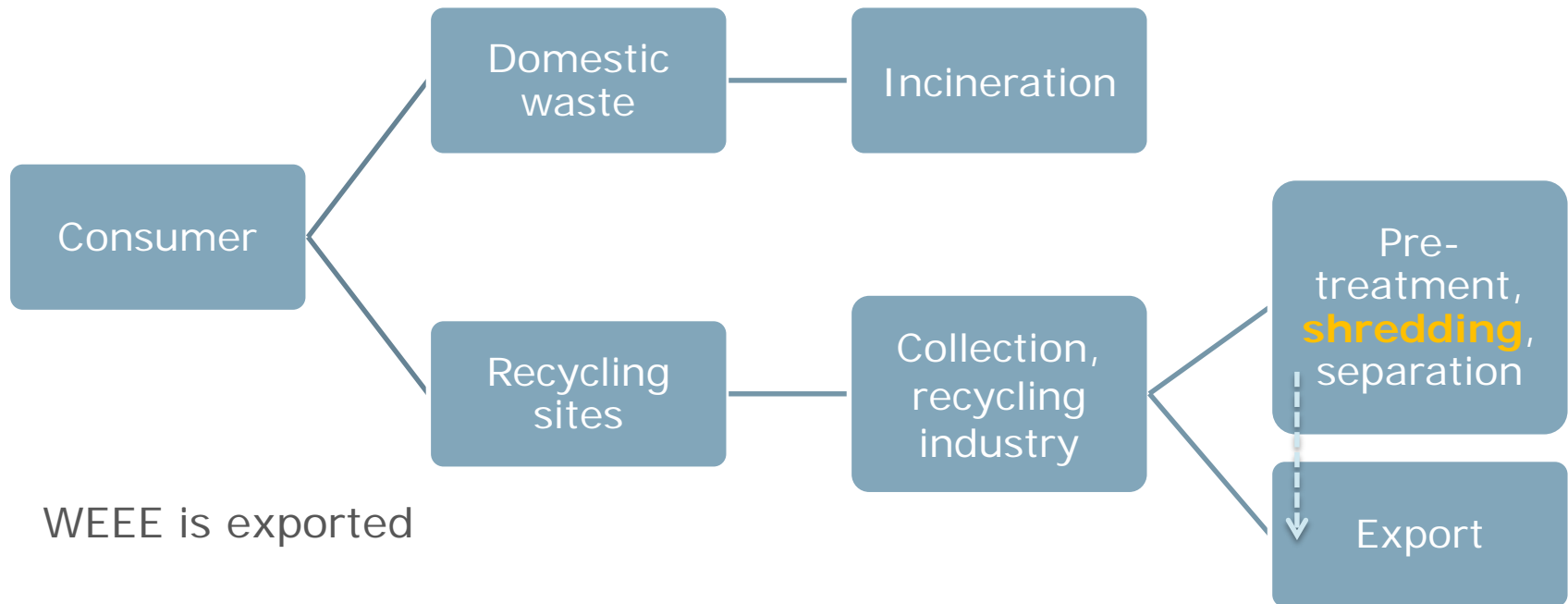
(2) However, the single consumer may dispose up to 3 smoke detectors of category 2 per month as domestic waste.

Today's behaviour, however

- Public awareness of correct disposal and recycling
 - Electronic waste
 - Hazardous waste
- Recycling sites
 - Storage → accumulation
 - Incineration
 - Hazardous waste center → incineration
 - Danish Decommissioning

Disposal of WEEE in DK

(WEEE - Waste Electrical & Electronic Equipment)



WEEE is exported

Shredding of an ICSD could lead to spreading of Am-241

Producer responsibility

- *A new Order from the Ministry of the Environment (today Ministry of Environment and Food): Order no. 130 of 6 February 2014 Statutory Order on placing on the market of electrical and electronic equipment and management of waste electrical and electronic equipment*
- *Based on WEEE-directive*
 - *DIRECTIVE 2012/19/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 on waste electrical and electronic equipment (WEEE)*
- States that ICSDs are covered by producer responsibility
- Consumers actually behave in accordance with the WEEE-directive

New procedure

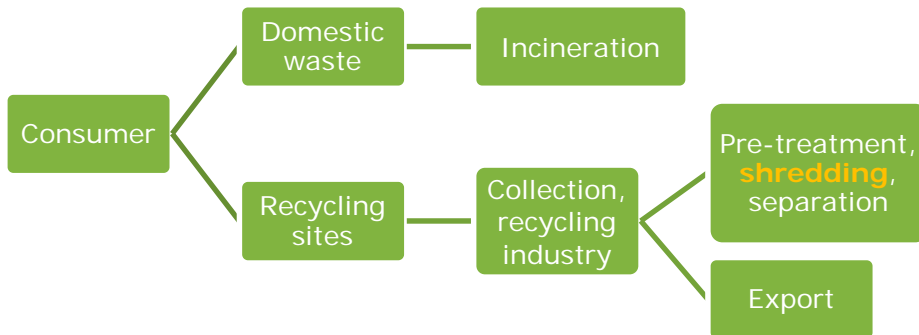
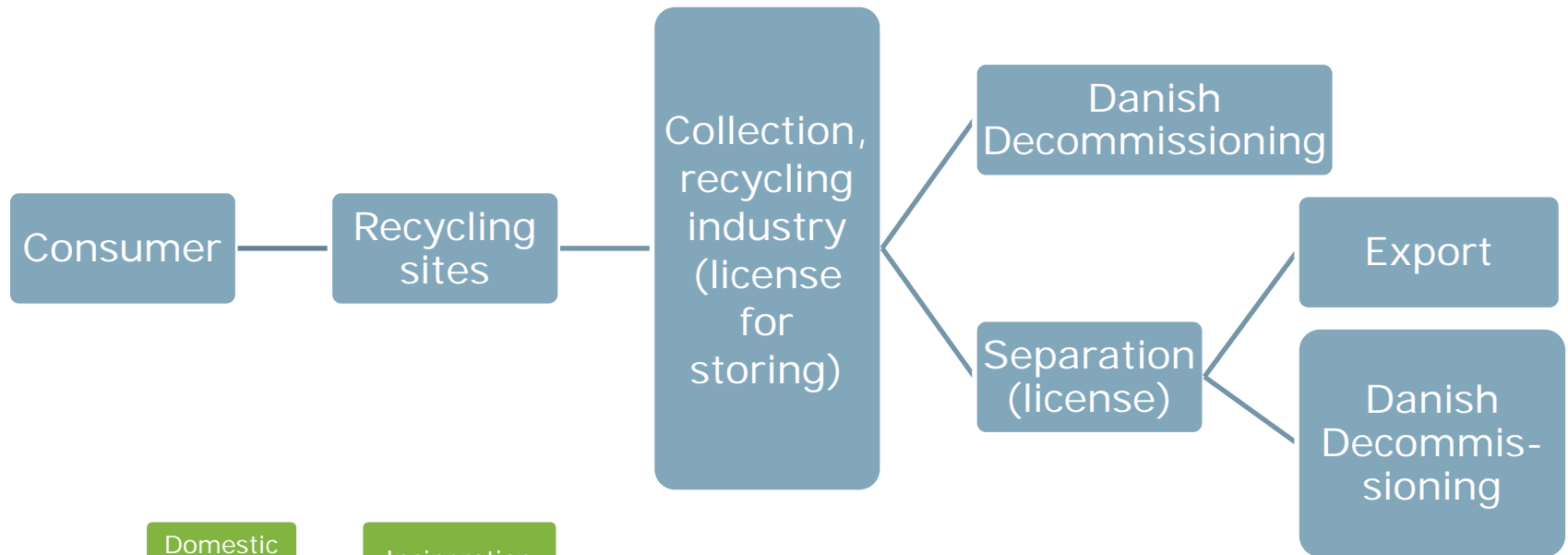
Cooperation with:

- Danish Environmental Protection Agency (Miljøstyrelsen)
- DPA-System (Danish Producer Responsibility System)

The new procedure:

- Using the exiting waste flow
- No sorting at recycling sites
- A sorting guide for the recycling industry
 - Preventing shredding of ICSDs
- License
 - Storage, separation

New procedure



In conclusion

New procedure for disposal of ICSDs...

- ... is in accordance with
 - WEEE directive
 - Intuitive consumer behaviour
 - Fits in the existing waste stream
- ... prevent
 - Storage of large numbers of ICSDs at recycling sites
 - Shredding of ICSDs