



ANGELS CASTELLNOU

Commercial Manager



BATREC

Swiss quality recycling solutions

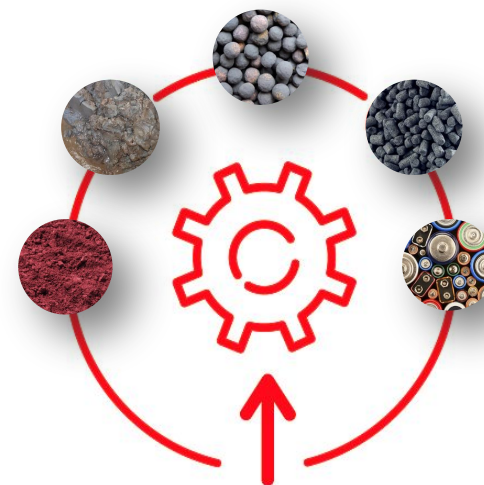
BATREC: TREATMENT OF MERCURY AND MERCURY WASTES: MERCURY STABILIZATION AND SAFE DISPOSAL

MERCURY STABILISATION BATREC IN A NUTSHELL

BATREC is part of SARP Industries and located in Switzerland



5 core activities



Mercury stabilisation
Mercury containing waste treatment
Oil & Gas Adsorbents recycling
Activated Carbon reactivation
Battery recycling

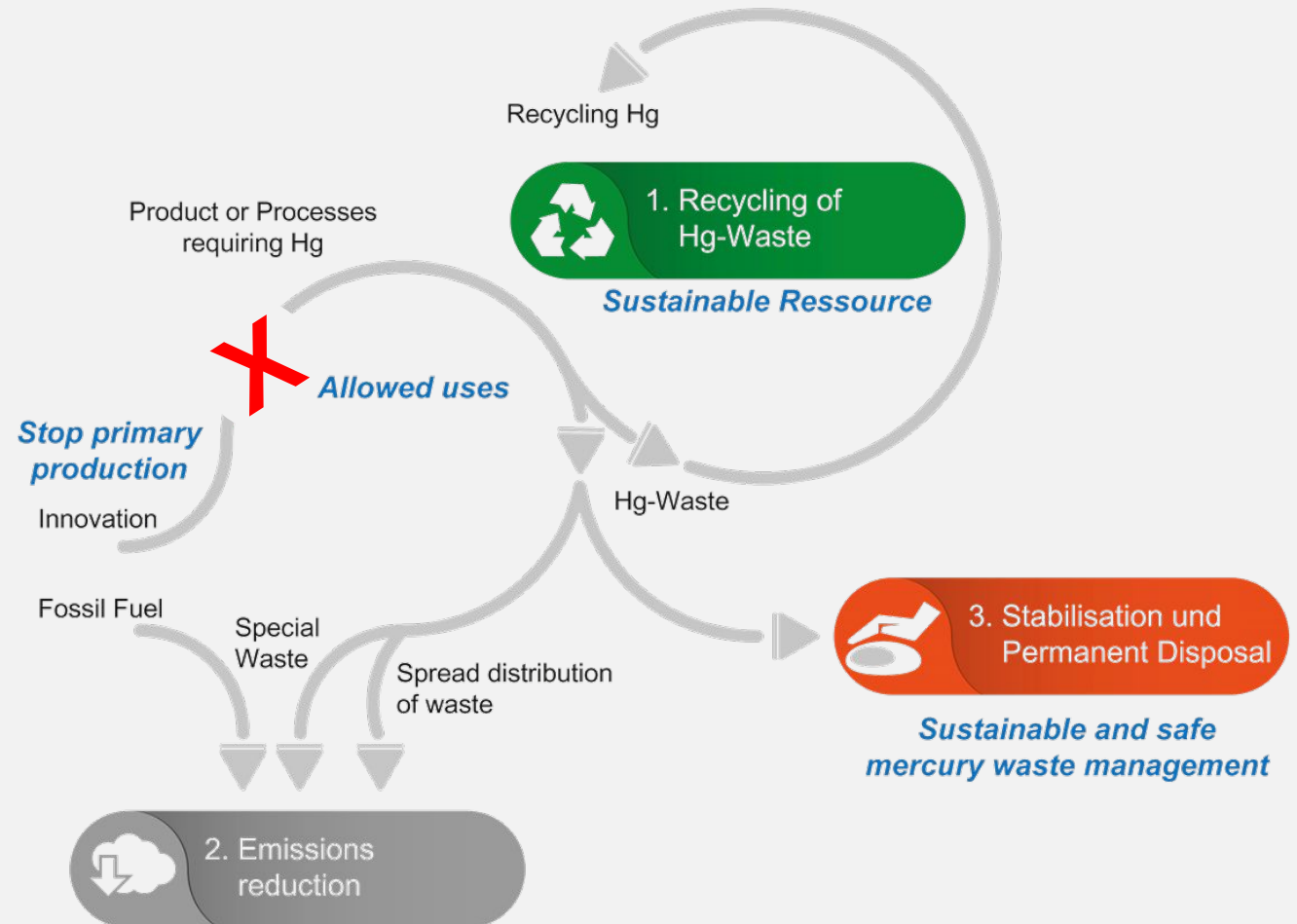
Turnover 2020 16 Mio. CHF
Turnover 2021 ~20 Mio. CHF

MERCURY STABILISATION

THE MINAMATA CONVENTION

The **MINAMATA CONVENTION** is an international **treaty** developed with the backing of the United Nations Environment Program to **protect human health and the environment from the harmful effects of mercury**.

- 150 countries agreed on:
- the **reduction and phase out of mercury use** in a number of products and processes.
 - implementing **control measures on environmental emissions**.



MERCURY STABILISATION

What do we mean by « stabilisation »?

➞ Conversion of toxic Mercury (Hg) into non-toxic Mercury Sulphide (HgS)

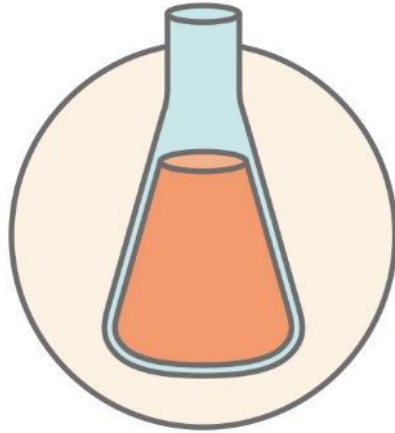
$\text{Hg}_{(l)}$

S^{2-}

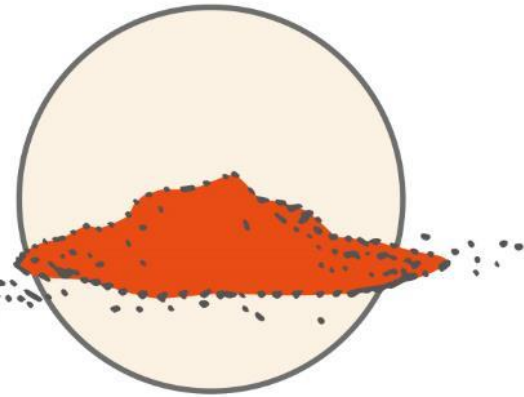
$\text{HgS}_{(s)}$



+



=



Metallic Mercury

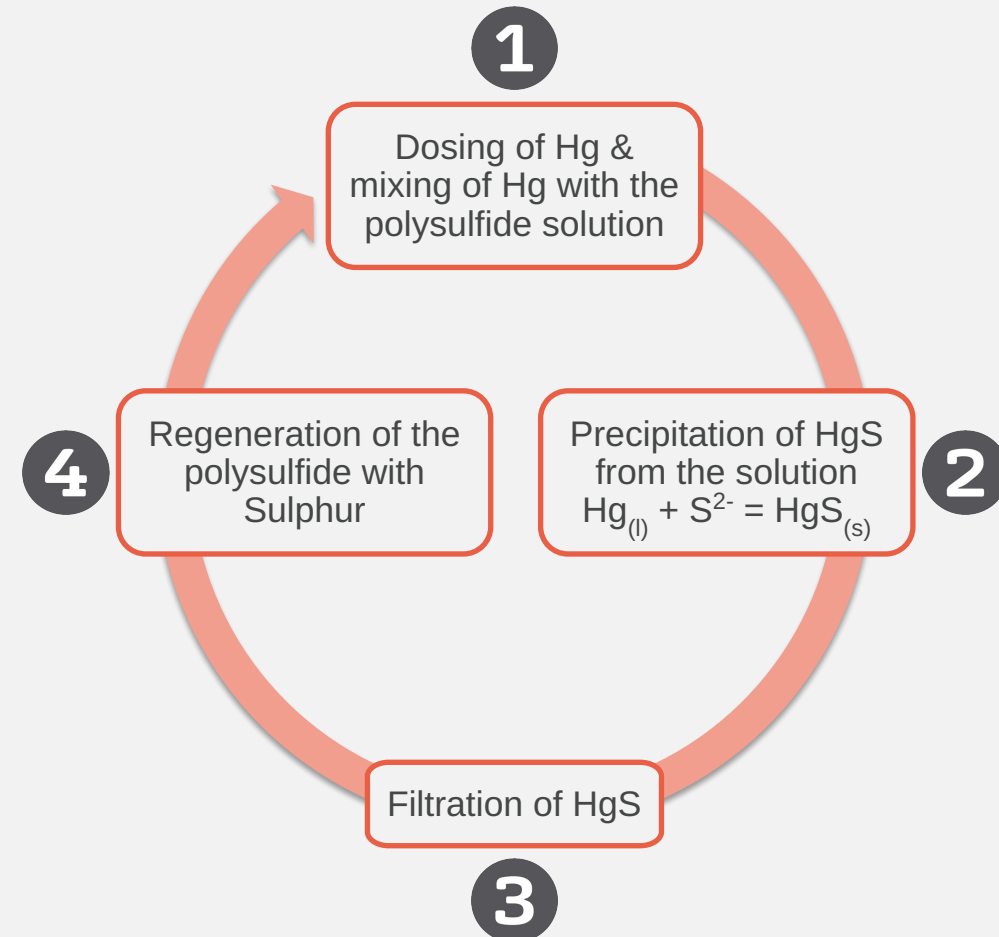
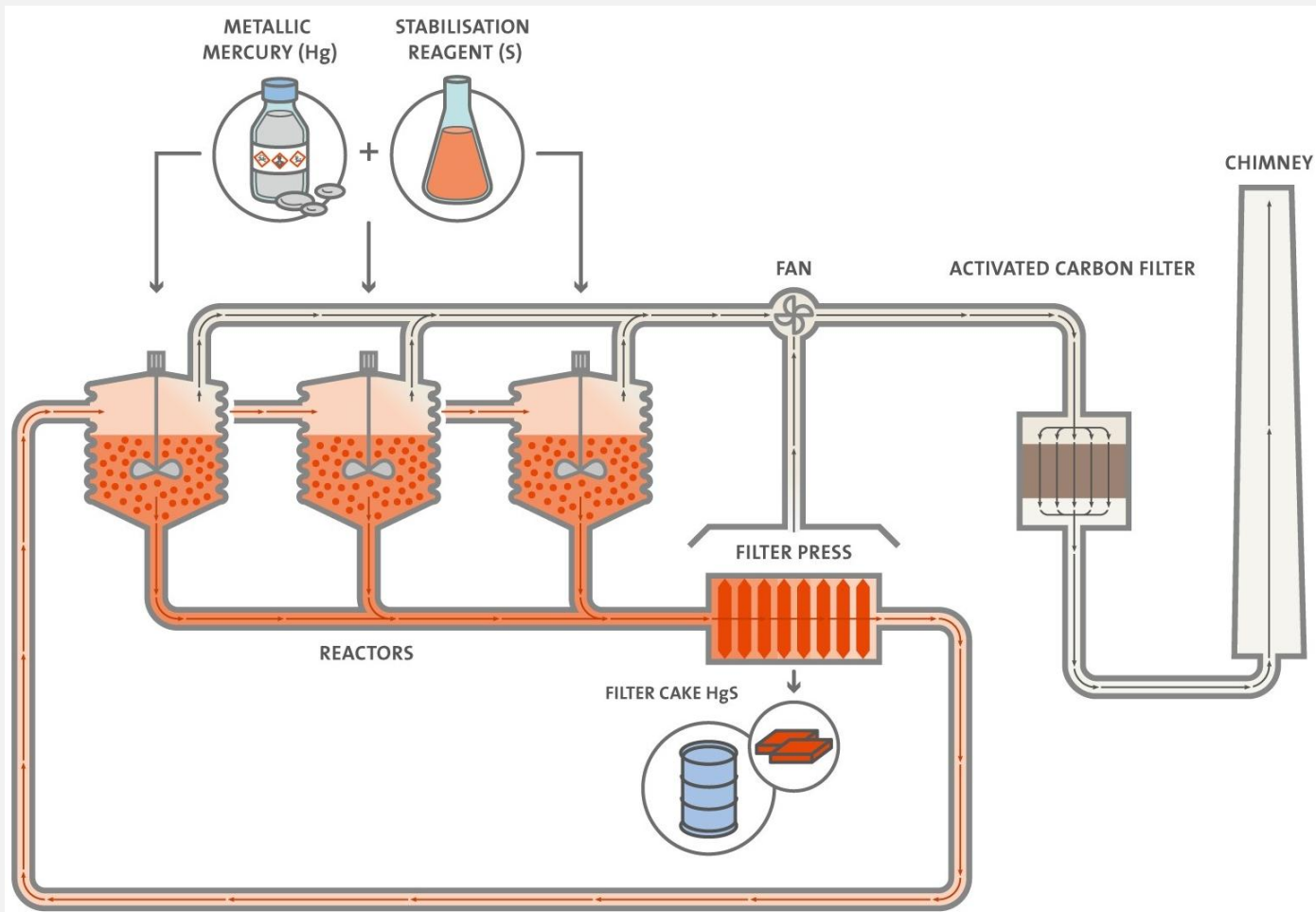
Stabilisation reagent
(polysulfide)

Cinnabar (HgS)

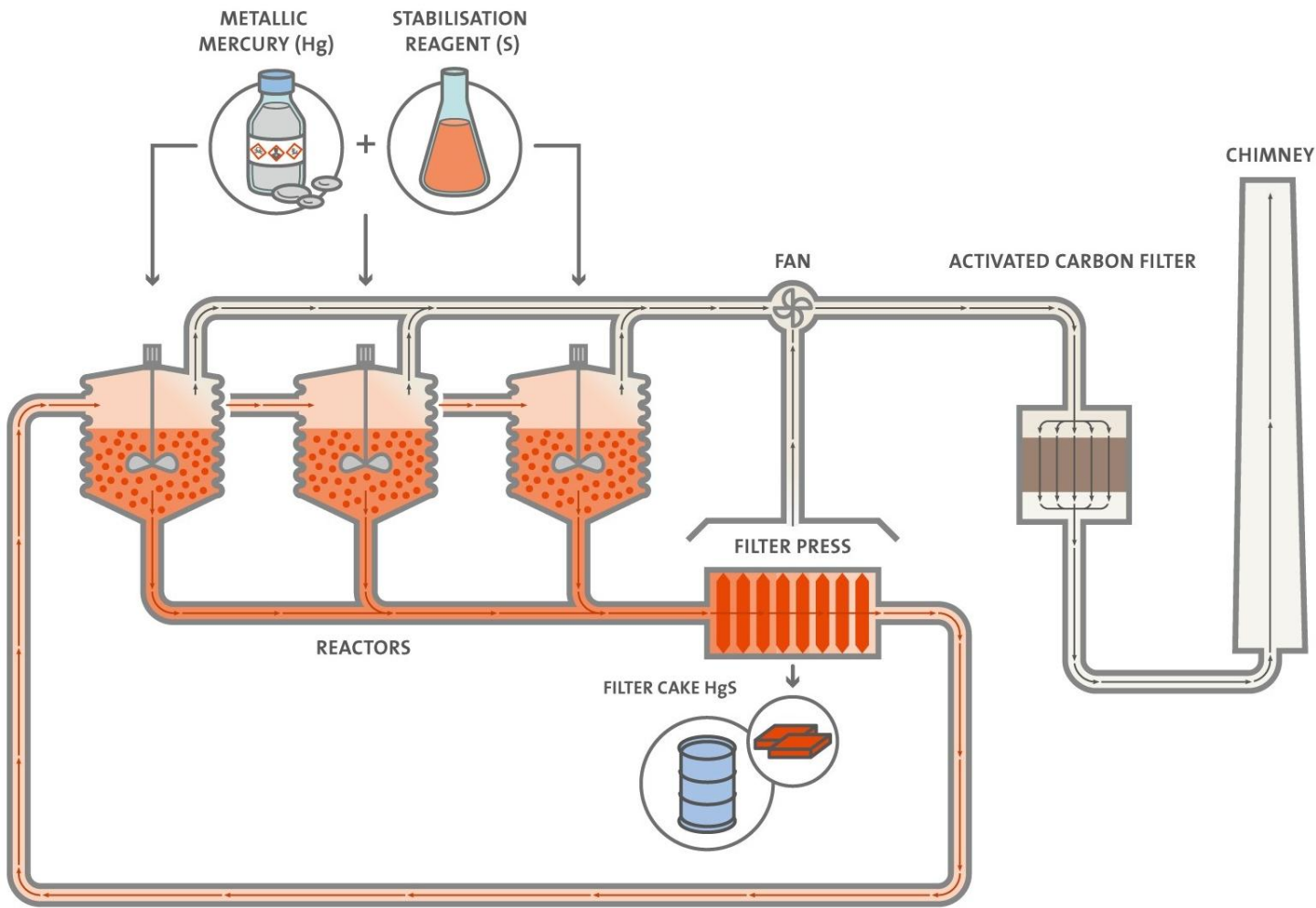
HgS is

- non toxic
- the most stable Hg compound
- the most insoluble Hg compound

MERCURY STABILISATION STABILISATION PROCESS



MERCURY STABILISATION STABILISATION PROCESS



Europe, US
Australia
South America
China, Japan



MERCURY STABILISATION

MERCURY SULPHIDE (HgS)

mass balance

1'000 kg of Hg turn into **1'190 - 1'250 kg of HgS**

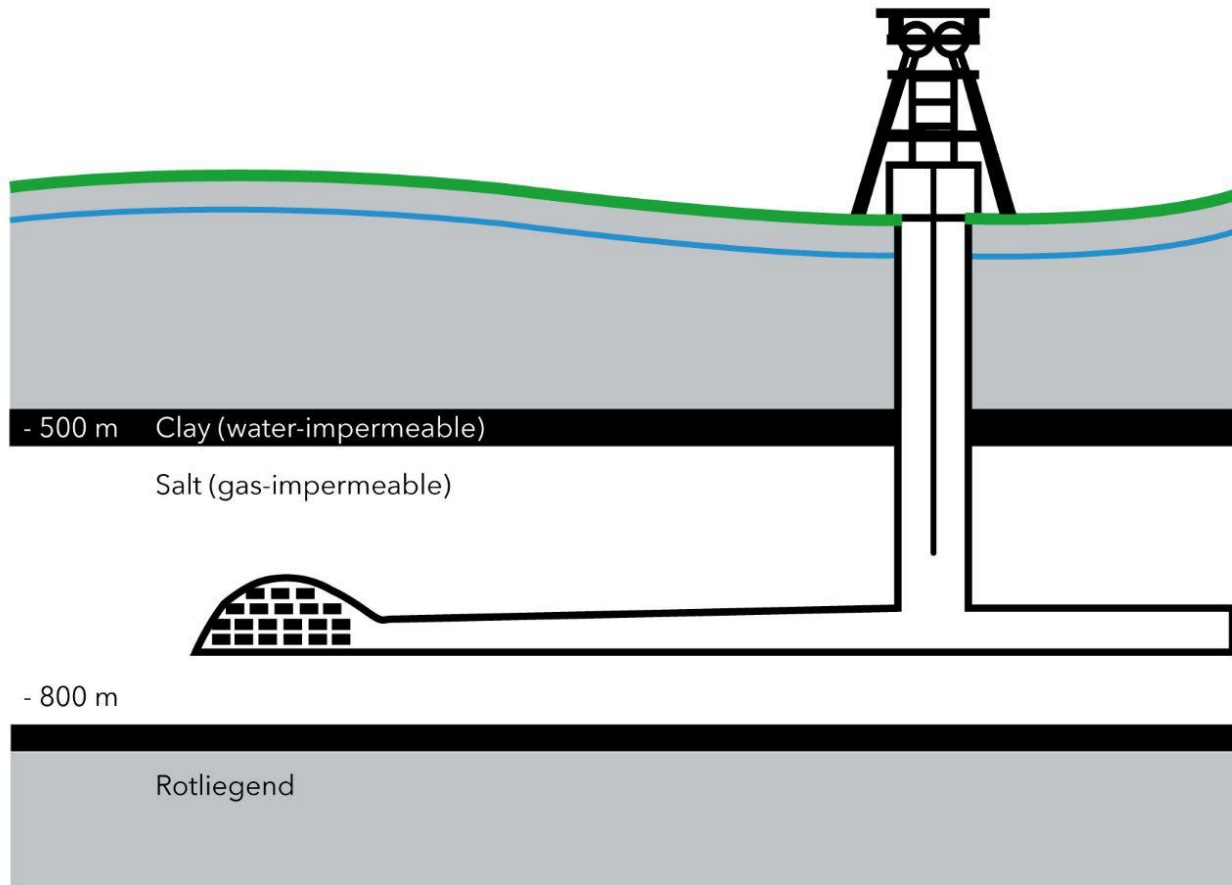
HgS composition

- Hg 80 – 84 %
HgS 92.8 – 97.4 %
- H₂O 1.0 – 5.0 %
- S 0.7 – 3.0 %
- Na 0.4 – 1.8 %
- metallic Hg < 100 ppm



- fine grain size
- filter cake with a low humidity

MERCURY STABILISATION PERMANENT DISPOSAL of HgS in a K+S SALT MINE

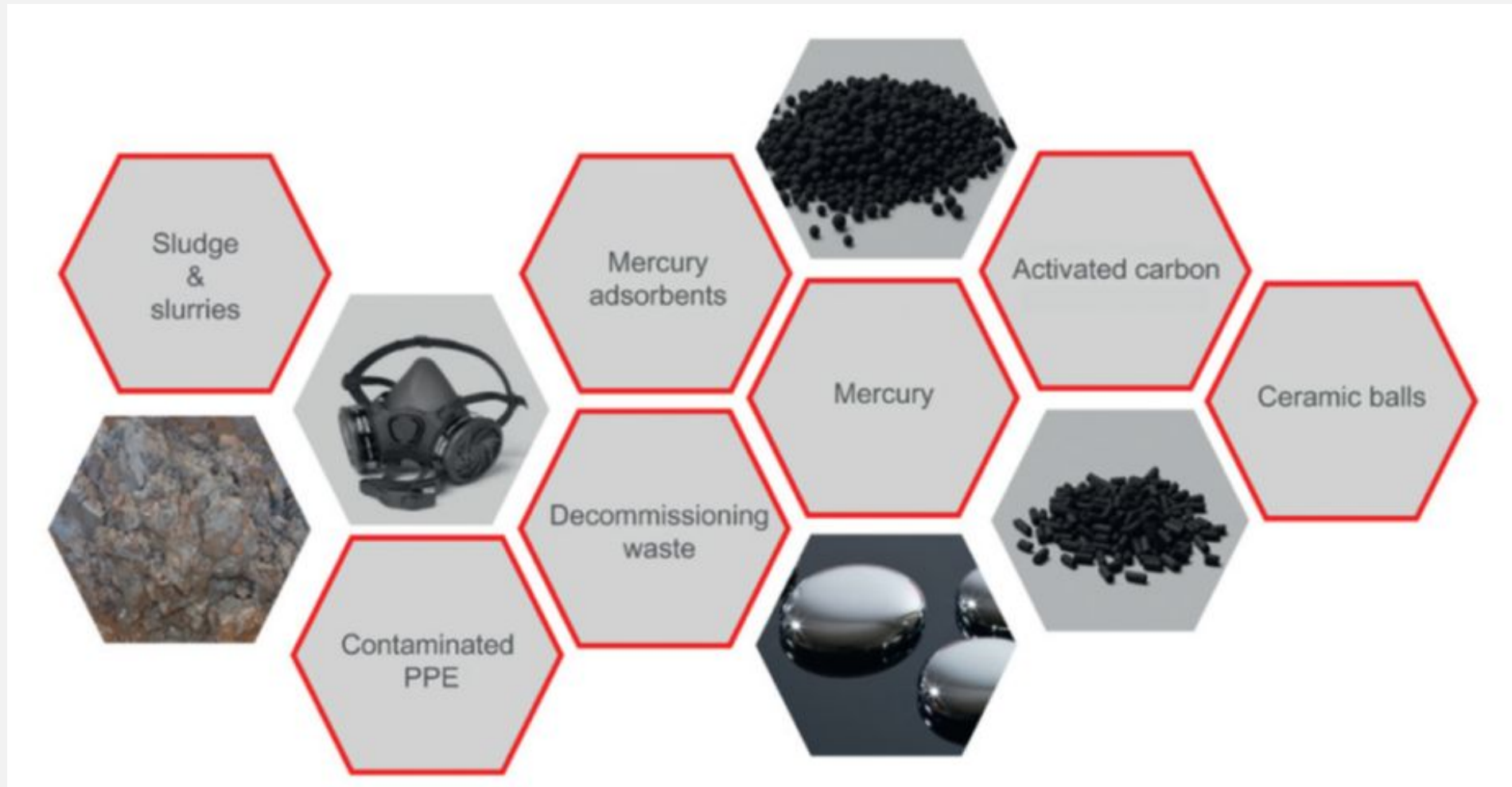


salt mine disposal

- back filling of an excavated salt mine in Germany with (hazardous) waste
- deposit at depths of 500 to 800 m
- no further solidification required
- no requirements concerning leaching behavior



MERCURY WASTE OTHER TREATMENT TECHNOLOGIES



MIXED MERCURY WASTE EXAMPLES



Mercury in small packaging



Laboratory chemicals

MIXED MERCURY WASTE EXAMPLES



COD Testing tubes

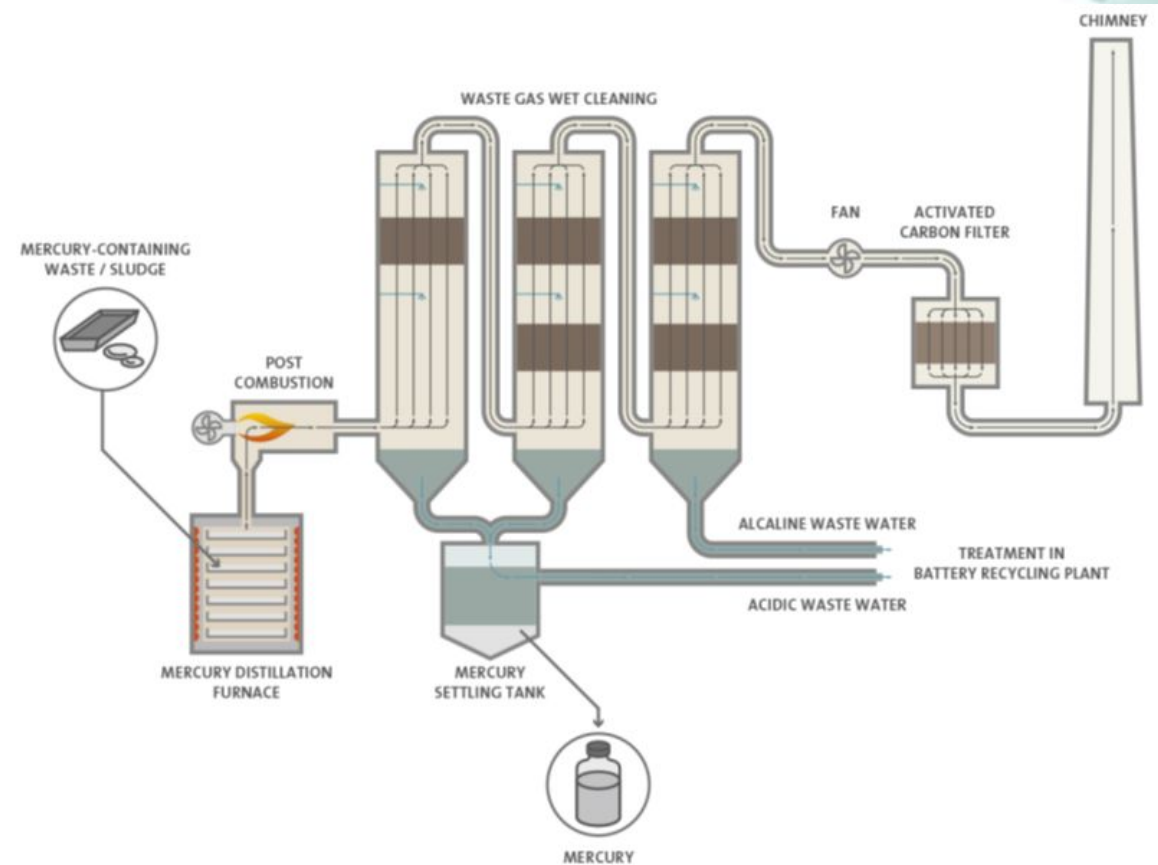


Laboratory chemicals

BATREC offers in addition **other treatment technologies** according to the different types of waste:

- ✓ **Distillation unit** for Mercury waste (any type of waste contaminated with mercury: lamps. Thermometers, button batteries), to recover the Hg in metallic form, followed by a stabilization of liquid mercury.

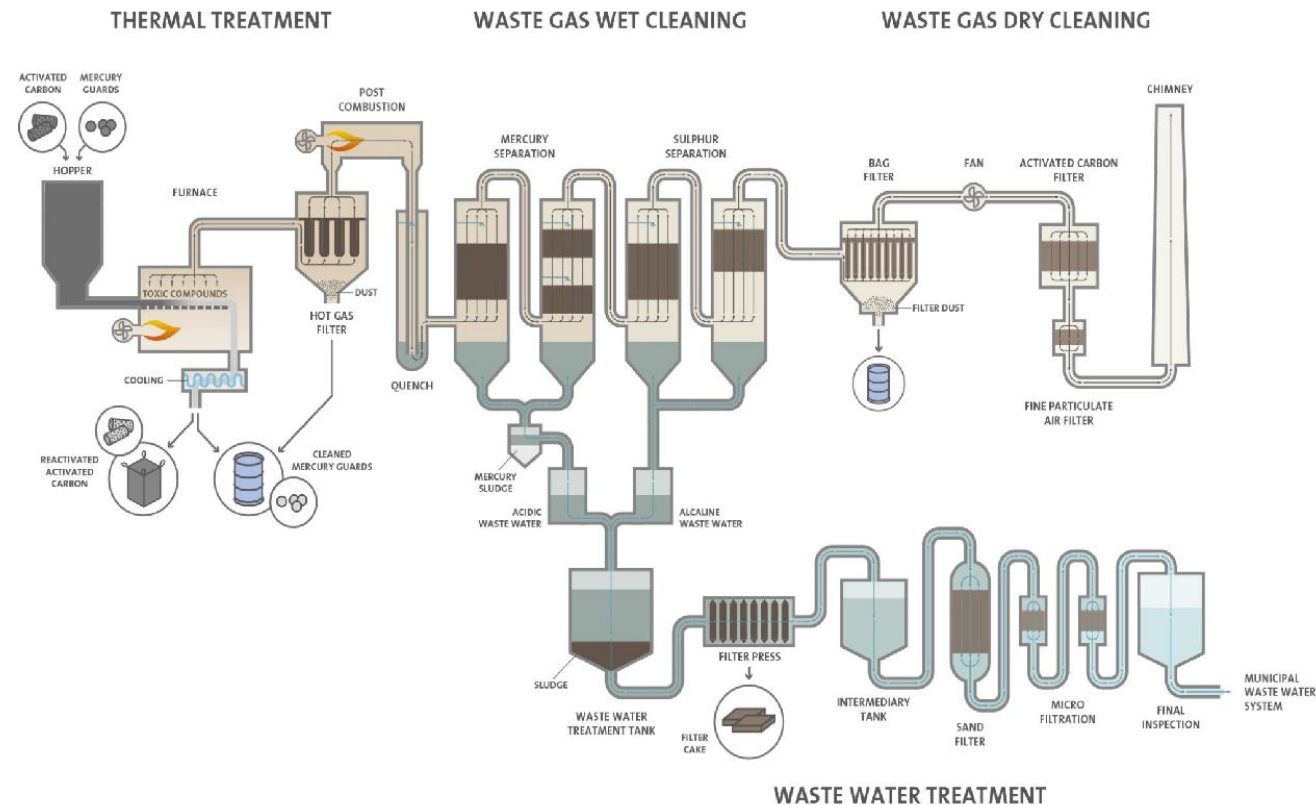
By heating to over 360°C, the mercury contained in the waste vaporizes, and condenses again as pure mercury in a condensation column.



Hg distillation process

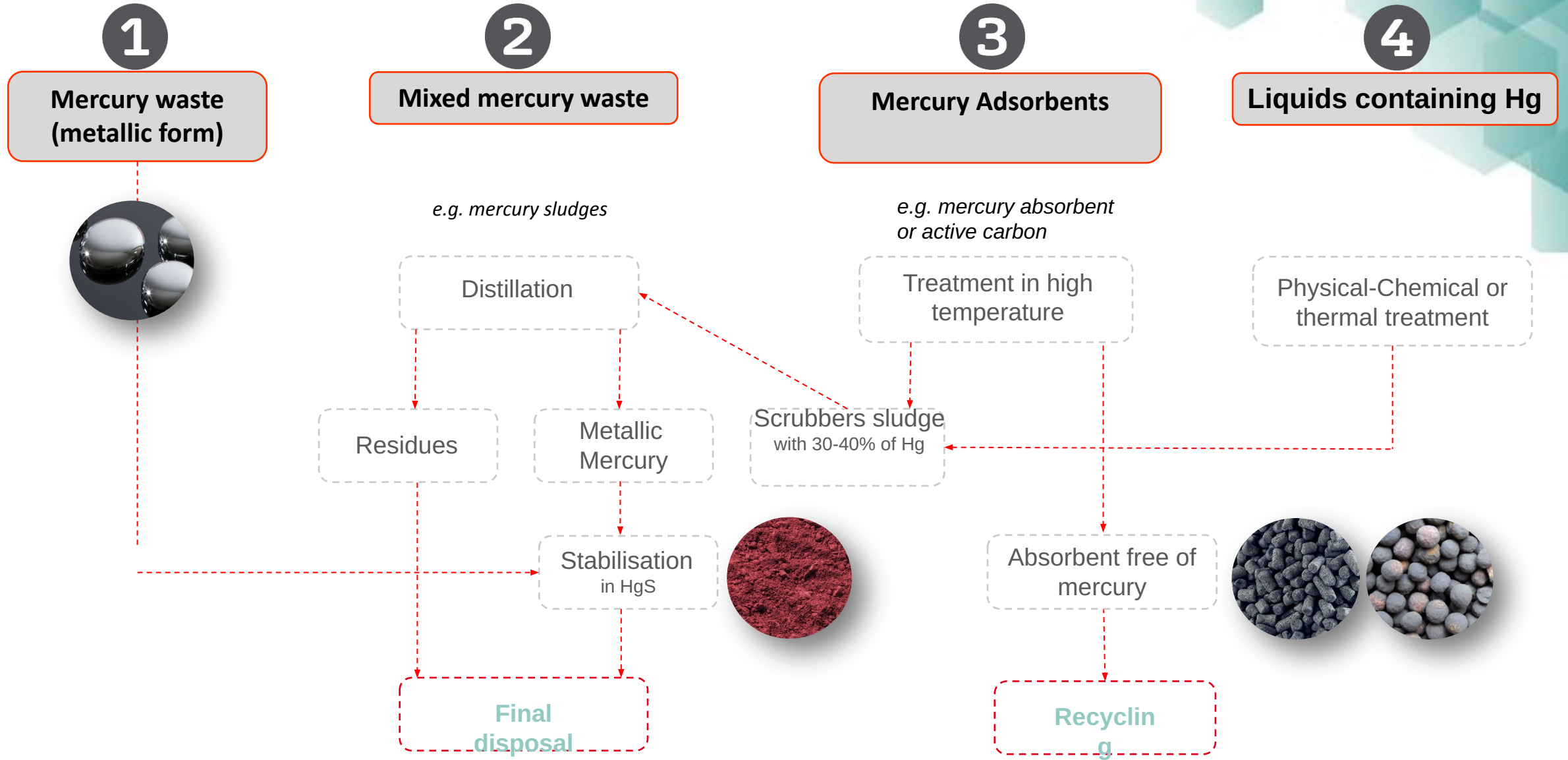
- ✓ **Reactivation unit with a thermal treatment step** for the decontamination of mercury absorbents, allowing these products to be returned into industrial processes. Soils and sludges contaminated with soil, or PPE are processed through this unit.

Sludges, residual material, soils, from old-industrial sites are processed at our facility to extract Hg in several stages. At the end of the process, the recovered Hg is stabilized.



Process flowsheet

MERCURY STABILISATION WASTE STREAMS. RECAP.





THANK YOU FOR YOUR ATTENTION



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or visit us in Switzerland.....

