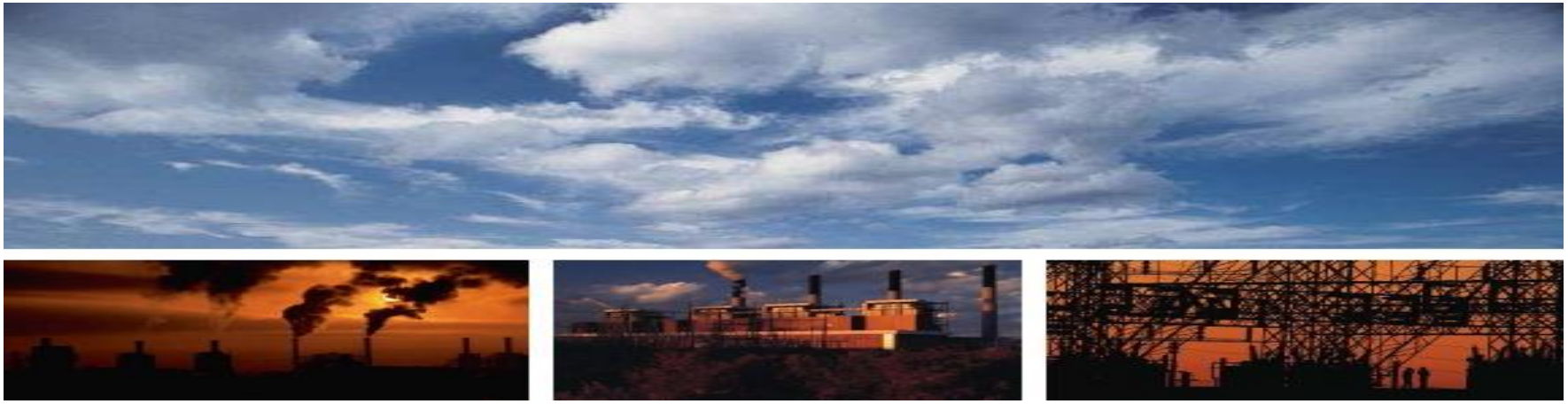
Technology for Abatement of Gas Phase Mercury



MercuRemoval
GAS TREATMENT TECHNOLOGY

Yissum
Hebrew University Technology Transfer

Hutchison Kinrot
WATER & CLEANTECH VENTURES

May 20, 2015

Overview

- Technology for removal of mercury from flue gas emissions.
- Developed in the Hebrew University.
- Comprehensive POC including lab scale and field work.
- 3 patent applications.
- Company incorporated in Feb. 2015 within Hutchison Kinrot.

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GAS TREATMENT TECHNOLOGY

The Team

- Dr. Zach Barnea – Founder & Project Manager
- Prof. Yoel Sasson – Founder & Scientific Advisor
- Eng. Assaf Brosh – Process Engineer
- Dr. Yaron Abadi – Engineering Consultant

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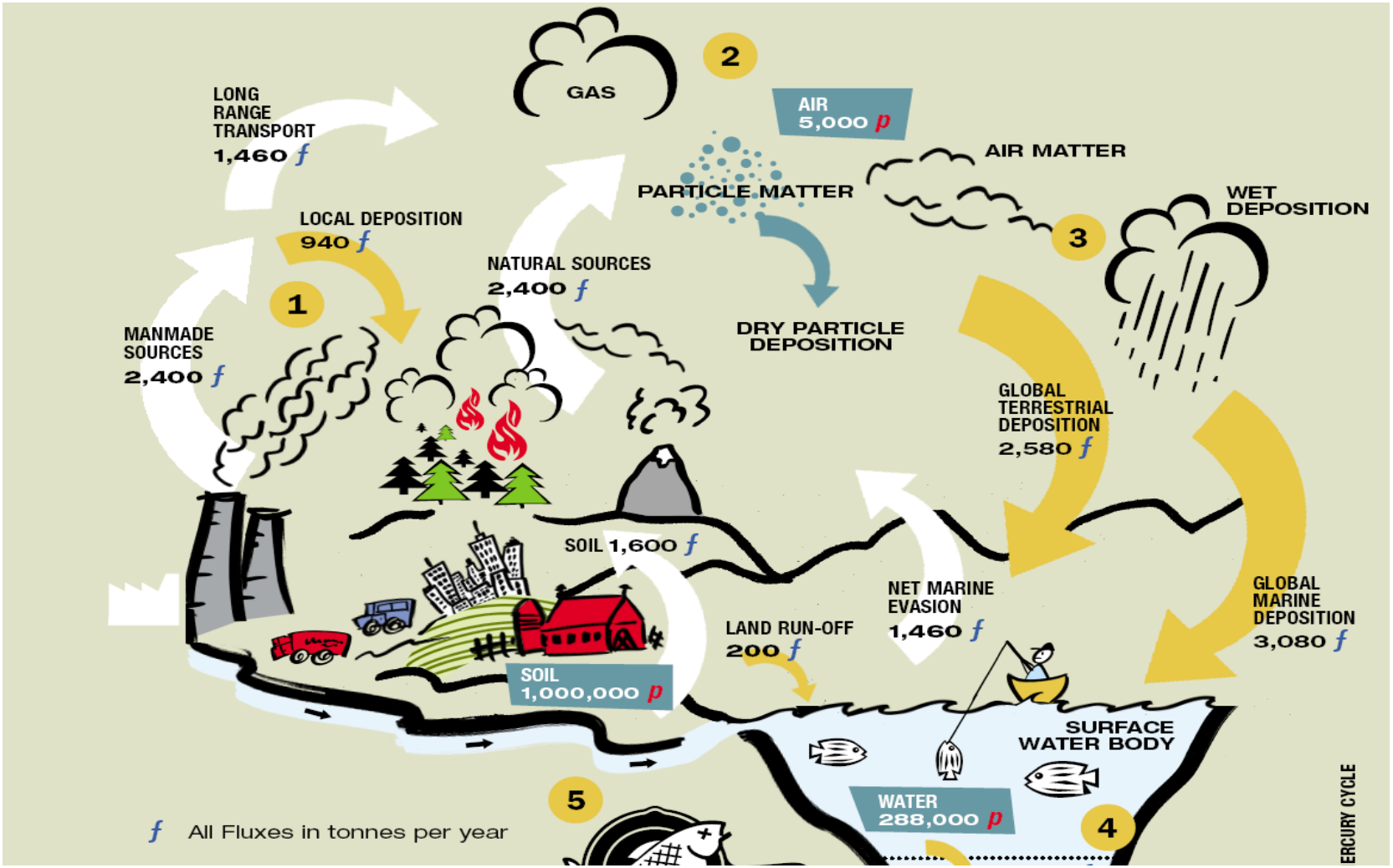
Mercury Cycle



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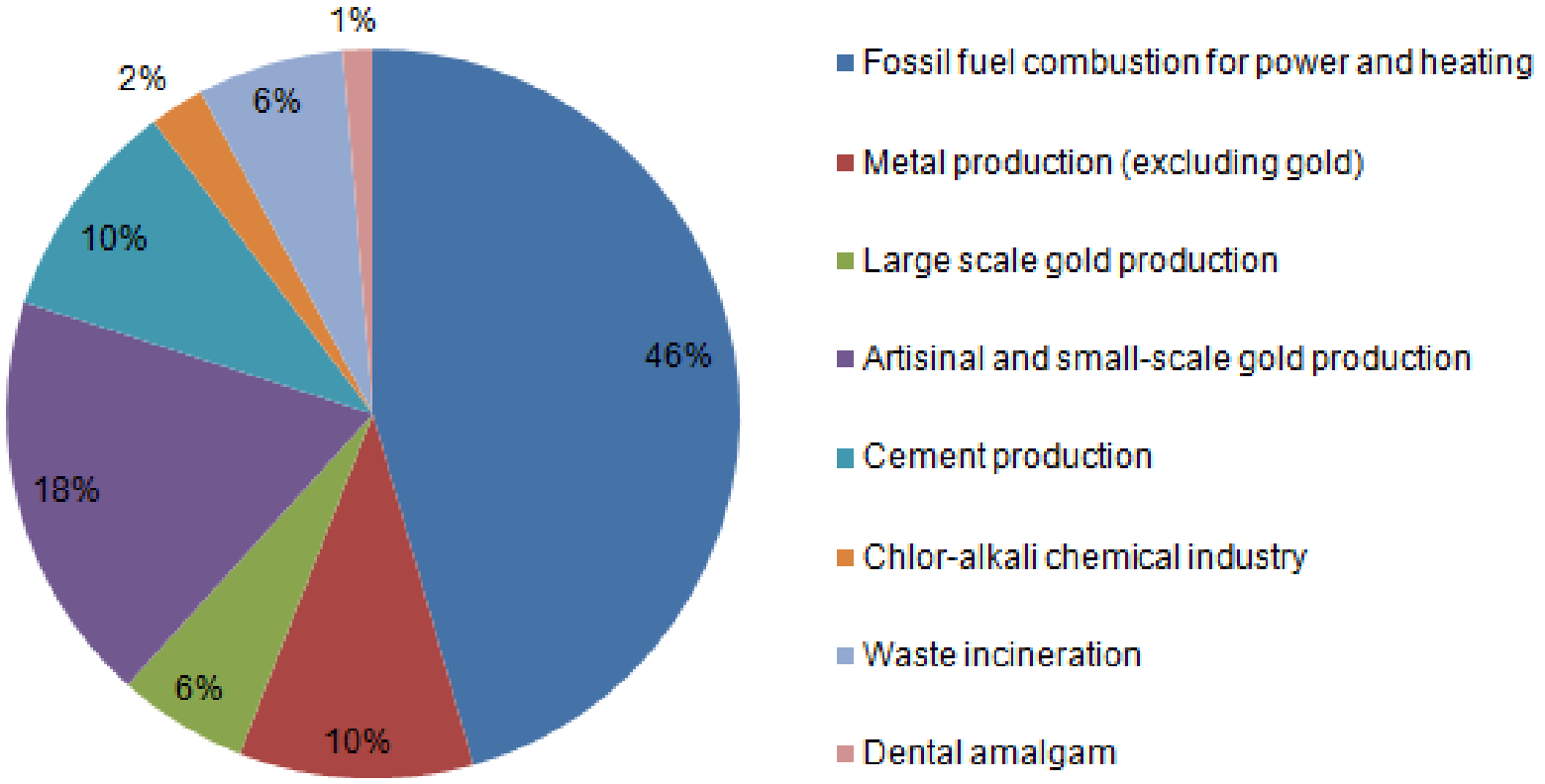
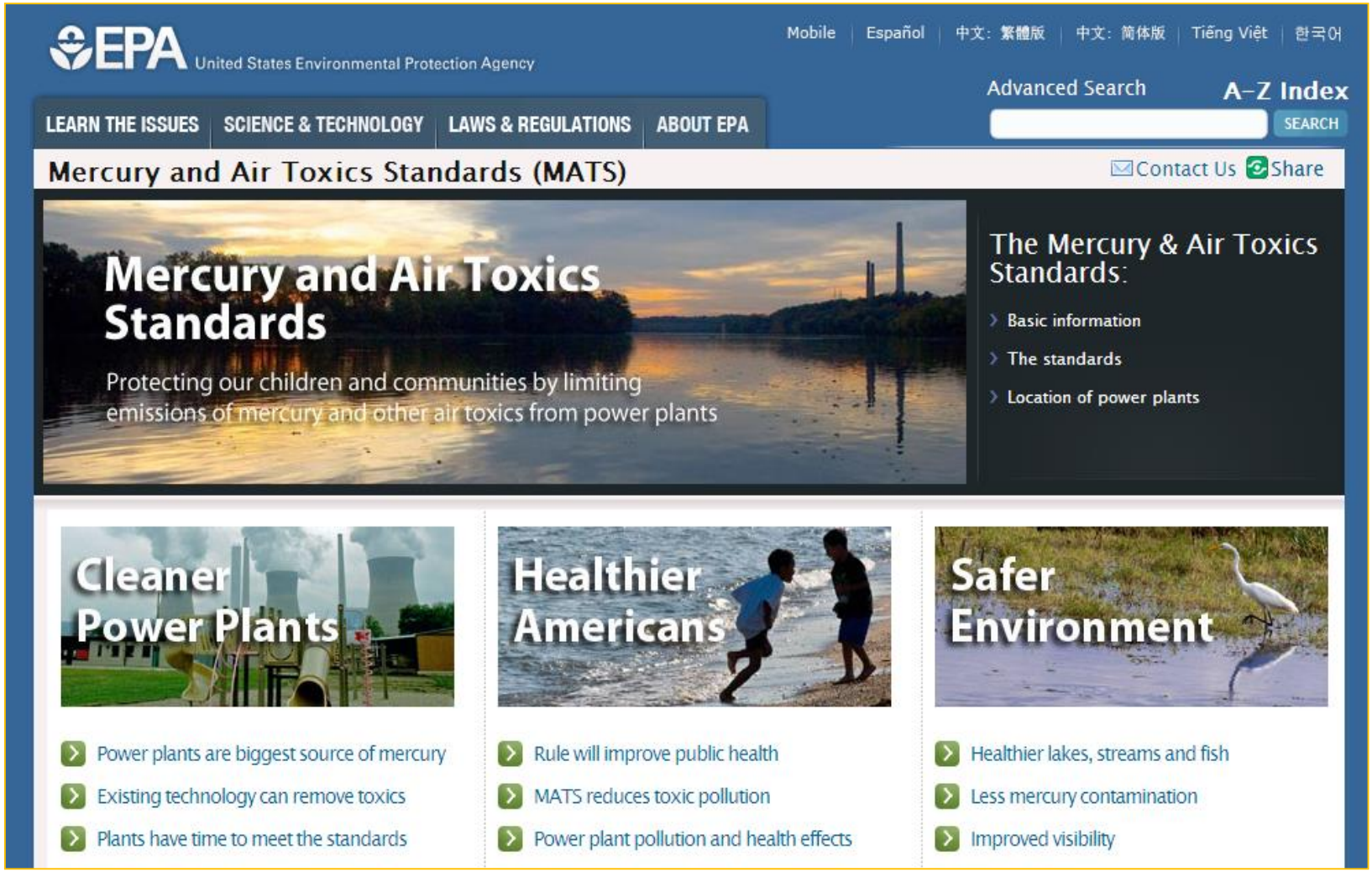
Global Anthropogenic Mercury Emissions in 2008



Source: AMAP/UNEP, 2008. Technical Background Report to the Global Atmospheric Mercury Assessment. Arctic Monitoring and Assessment Programme/UNEP Chemicals Branch. Page 39.

New Rules for Mercury Emission shake the Market



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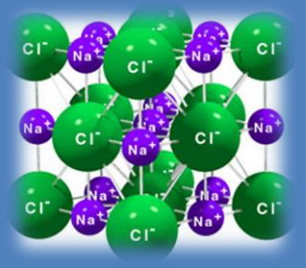
MercuRemoval - Innovative Absorption of Mercury using Ionic Liquids

- Innovative chemical process based on Ionic liquids and oxidants.
- Elementary mercury is oxidized and then absorbed into liquid.
- Kinetics is rapid, contact time between flue gas and liquid is short.
- Simple regeneration process – mercury could be swiftly recovered from the liquid and then reused or safely disposed.
- High removal efficiency – 95-99%.

Ionic Liquids:

- Liquids that are composed entirely of ions
- NO measurable vapor pressure
- Liquid range of 300 °C (-96 - +300 °C)
- Excellent solvents for organic, inorganic and Polymeric materials



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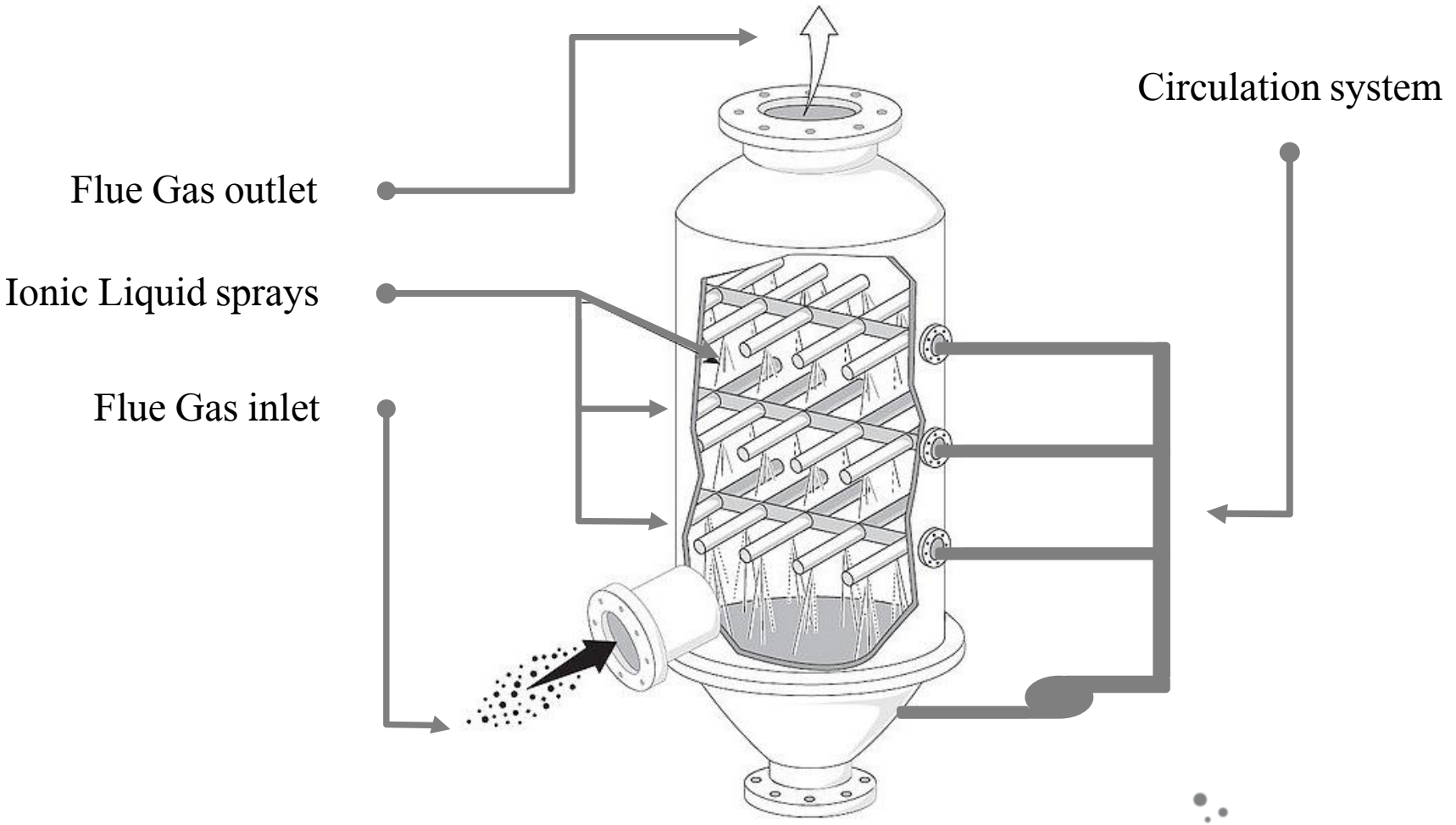
Simple and Established Engineering Concept – Wet Scrubber



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GAS TREATMENT TECHNOLOGY

Technological Advantages

- Capable of removing 95-99% of all mercury emissions
- Compatible with all types of coal and power plants
- Concentrate mercury from ppb levels in gas phase to pure mercury
- Simple engineering – conventional wet scrubber
- Environmentally friendly:
  - No waste stream
  - No vapor pressure

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Hutchison Kinrot
WATER & CLEANTECH VENTURES

- Owned by Hutchison Water and part of the Hutchison Whampoa Ltd. Group - operating in 52 countries, employs over 260,000 employees and has annual sales exceeding US$50 B
- Diverse Portfolio of 15 water and Cleantech technologies start-ups at various development and commercialization stages
- Initial Seed Investment: US$550K (can go up to $800K)
- Incubator operating under a franchise from the OCS
- Providing entrepreneurs with full service suite: offices, accounting, legal, R&D support, lab and testing facility, business development, extensive industry contacts and strategic advice

Thank you

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