

Efficient Solutions for Waste Water Treatment Using Electron Beams

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Over the last 100 years, we have benefitted from new chemical and pharmaceutical products intended for “Better Living for Humankind”. It is estimated that about 80,000 different chemicals were released into the environment over during the recent decades.



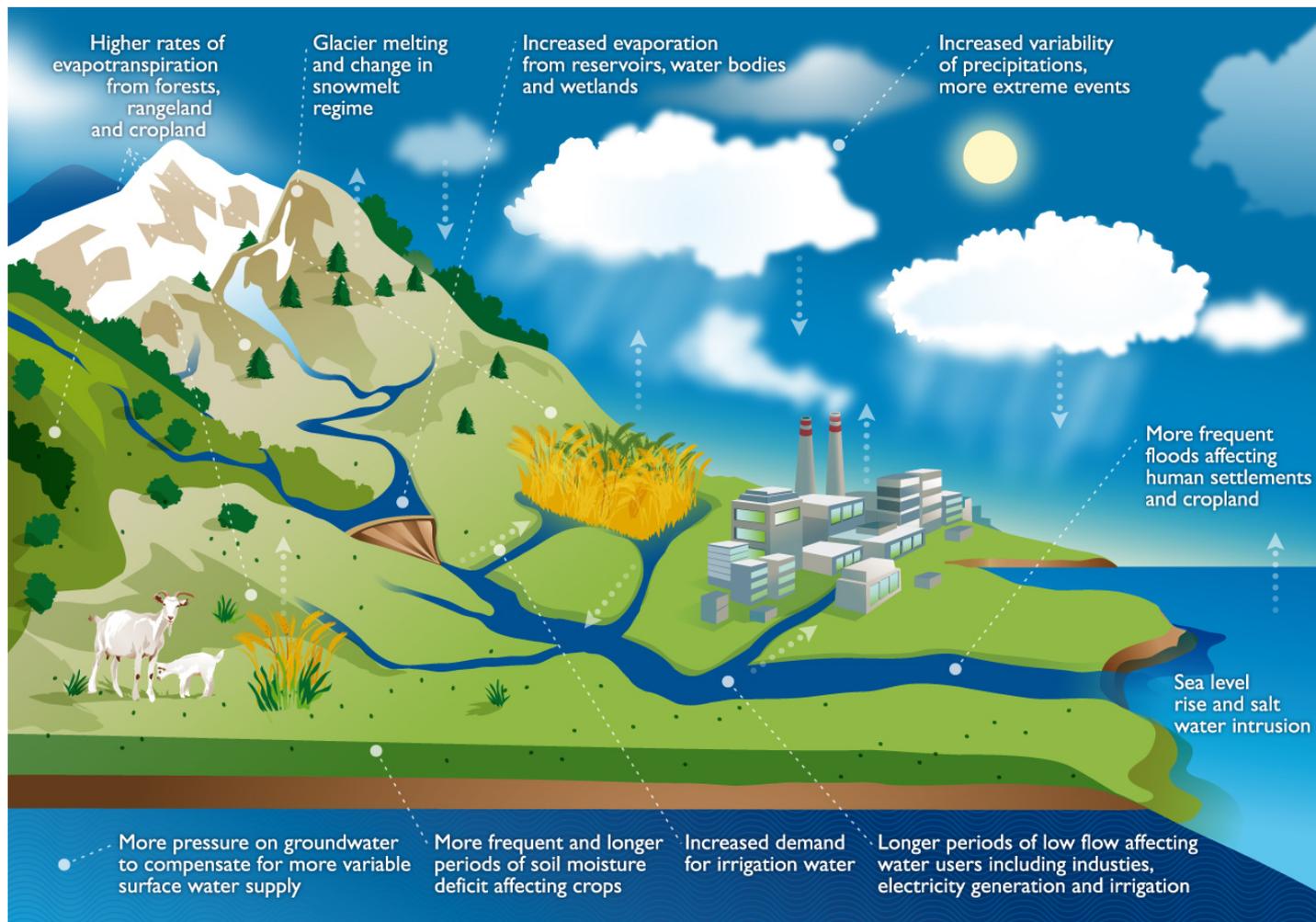


Image from FAO

Many of these chemicals find their way to surface and ground water, typically through use of treated domestic/industrial water, overflows from sewers/septic tanks, metabolism of animals.

Till to date, 26 million organic and inorganic substances have been inventoried.

Typical Wastewater Treatment

Main purpose of wastewater treatment

- Removal of harmful impurities (COD, BOD, S/S etc.)
- Removal of color, odor etc.
- Removal of T-N, T-P



Pollutants in wastewater :

Pathogens

Oxygen depleting organics

Nutrients (N,P)

Heavy Metals

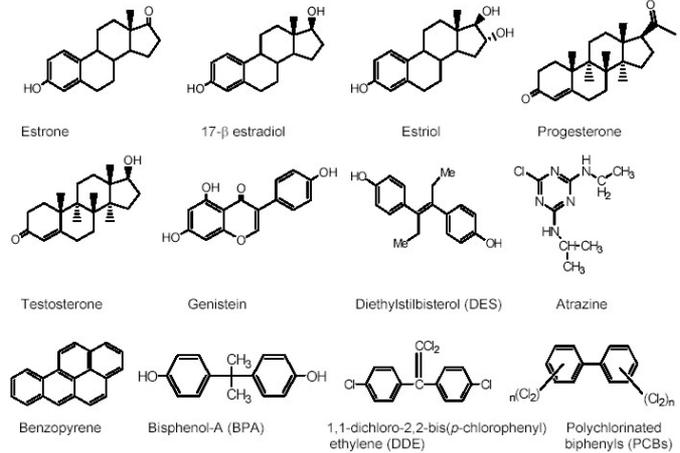
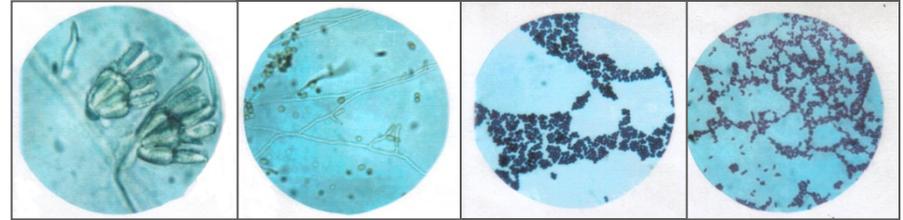
Chemicals – POPs

Endocrine disruptors

Pesticide

Pharmaceutical residues

Plasticizer etc.



Typical Wastewater Treatment

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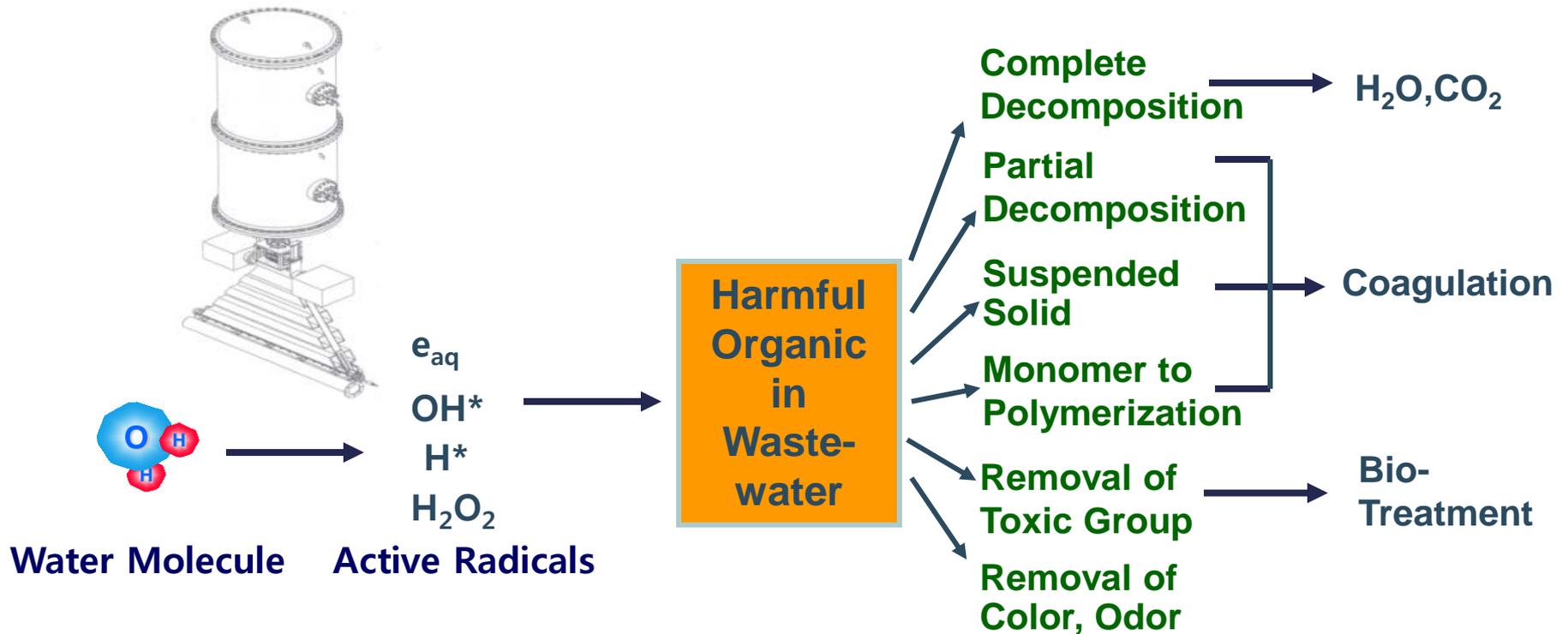
- Removal of harmful impurities (COD, BOD, S/S etc.)
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- Removal of T-N, T-P

Electron Beam Technology

- Disinfection of microorganisms (Pathogenic organisms etc.)
to discharge to river, or to re-use in industries or irrigation
- Destruction of residual chemicals, such as POPs, endocrine disrupters, Pesticides, and Pharmaceutical residues.

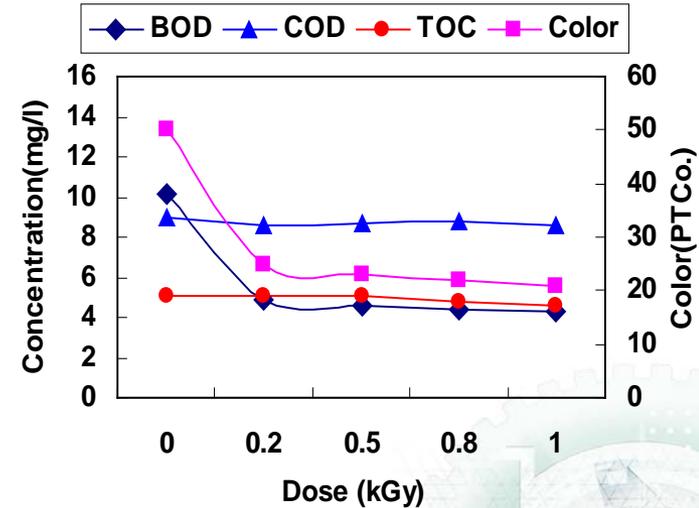
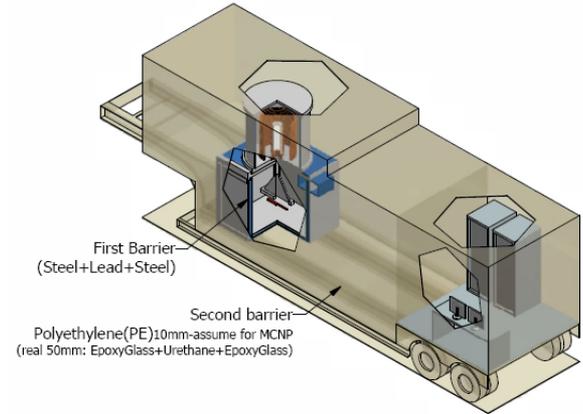
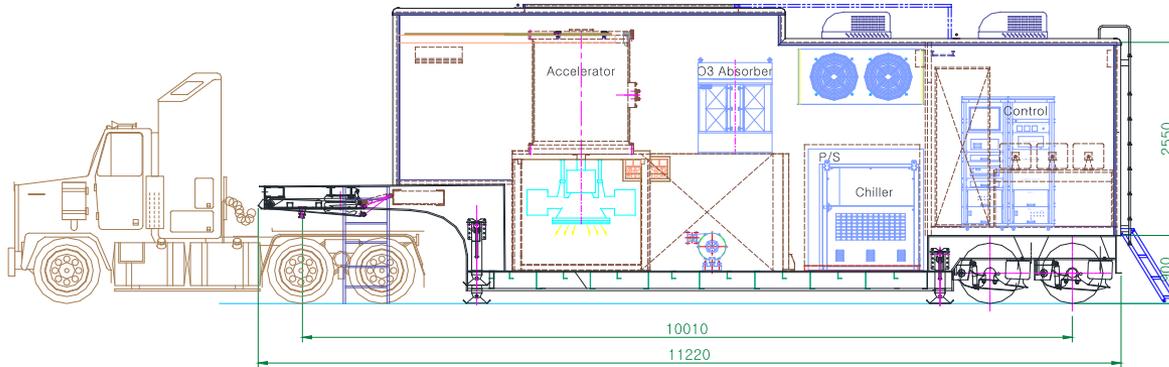


Wastewater Treatment with E Beams

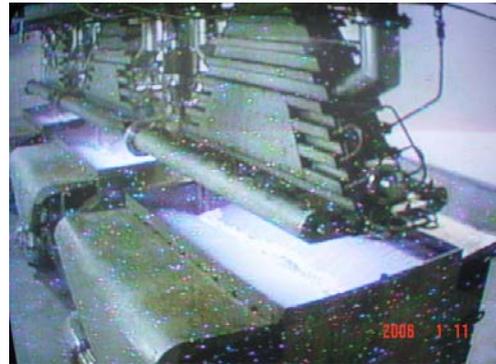
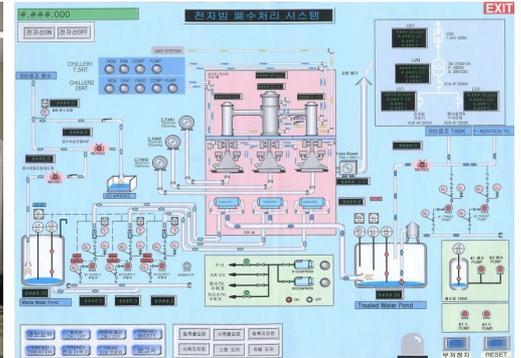
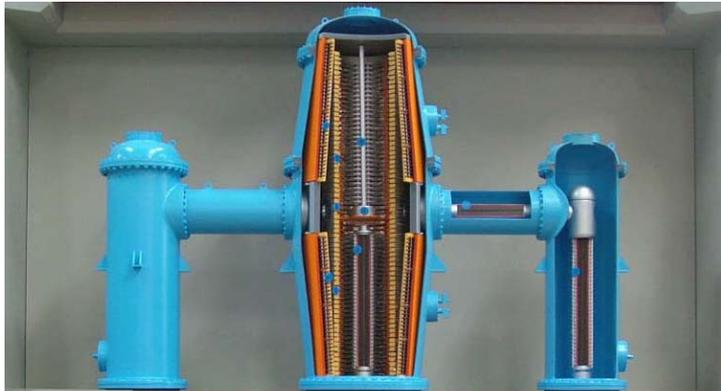




The mobile electron beam accelerator system developed can treat up to 500 m³ liquid waste/day or 10,000 m³/h of effluent gases and can be used at the site as a Pilot scale facility.



Full-scale electron beam accelerator (1 MeV, 400 kW) plant for treatment of 10,000 m³/d of waste water from textile dye industry



Summary

It is becoming increasingly clear that humankind's environmental problems are no longer merely local or regional, but have become continental in scope. Economically and technically feasible technologies for controlling pollution are being sought by technologists, and electron beam technology is a promising option.

Electron beam technology is eco-friendly process with no addition of chemical compounds, no heating and ease of automation. Therefore, it is an effective method of remediation of environmental pollutions, such as for industrial and wastewater treatment, and also for the sludge treatment and reuse.



Thank you!

