Table 4: Selection of Modern Destruction Technologies

Technology	Process
Gas-phase chemical reduction	Hydrogen reacts with chlorinated organic compounds, such as PCBs, at high temperatures, yielding primarily methane and hydrogen chloride. High destruction efficiencies. All emissions and residues are captured for assay and reprocessing, if needed.
Electrochemical oxidation	At low temperature and atmospheric pressure, electrochemically-generated oxidants react with organochlorines to form carbon dioxide, water and inorganic ions. High destruction efficiencies. All emissions and residues can be captured for assay and reprocessing, if needed.
Molten metal	Organochlorines and other materials are oxidized in a vat of molten metal, yielding hydrogen, carbon monoxide, ceramic slag and metal by-products. Destruction efficiencies are not known, but DREs are high.[e]
Molten salt	Organochlorines and other materials are oxidized in a vat of molten salt, yielding carbon dioxide, water, molecular nitrogen, molecular oxygen, and neutral salts. Destruction efficiencies may be high.
Solvated electron process	Free electrons in a solvated electron solution convert contaminants to relatively harmless substances and salts. Destruction efficiencies vary from 86 to 100 percent. All emissions and residues can be captured for assay and reprocessing, if needed.
Supercritical water oxidation	Under high pressure and temperature, organochlorines and other materials are oxidized in water. Destruction efficiencies are unknown, but DREs are high.[e] All emissions and residues can be captured for assay and reprocessing, if needed.
Plasma arc	Organochlorines and other materials are oxidized at very high temperatures. Destruction efficiencies are unknown, but DREs are high.[e] Dioxins have been identified in process residues.
Catalytic hydrogenation	Organochlorines are reacted with hydrogen in the presence of noble metal catalysts, yielding hydrogen chloride and light hydrocarbons. High destruction efficiencies.
Base catalyzed dechlorination	Organochlorines are reacted with an alkaline polyethylene glycol, forming a glycol ether and/or a hydroxylated compound, which requires further treatment, and a salt. Dioxins have been identified in process residues. Destruction efficiencies are not high.

[e] Destruction efficiencies are determined by considering the occurrence of undestroyed chemicals of concern in all gaseous, liquid and solid residues; for DREs, only gaseous residues are considered.

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Molten metal	Organochlorines and other materials are oxidized in a vat of molten metal, yielding hydrogen, carbon monoxide, ceramic slag and metal by-products. Destruction efficiencies are not known, but DREs are high.[e]
Molten salt	Organochlorines and other materials are oxidized in a vat of molten salt, yielding carbon dioxide, water, molecular nitrogen, molecular oxygen, and neutral salts. Destruction efficiencies may be high.
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Solvated electron process	Free electrons in a solvated electron solution convert contaminants to relatively harmless substances and salts. Destruction efficiencies vary from 86 to 100 percent. All emissions and residues can be captured for assay and reprocessing, if needed.
Supercritical water oxidation	Under high pressure and temperature, organochlorines and other materials are oxidized in water. Destruction efficiencies are unknown, but DREs are high.[e] All emissions and residues can be captured for assay and reprocessing, if needed.
Plasma arc	Organochlorines and other materials are oxidized at very high temperatures. Destruction efficiencies are unknown, but DREs are high.[e] Dioxins have been identified in process residues.
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