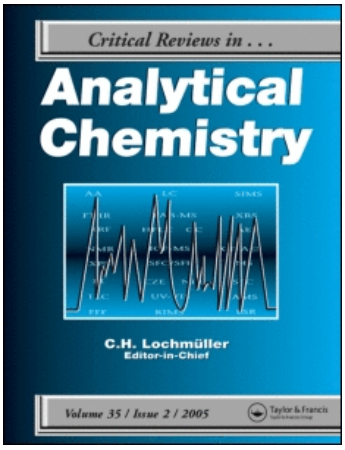

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Catalytic methods for detoxification of liquid, solid and gaseous industrial wastes

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Catalytic methods for detoxification of liquid, solid and gaseous industrial wastes

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In the report there are given the description of the catalytic methods for detoxification of liquid, solid and gaseous industrial wastes.

Catalytic methods are universal, efficient and allow to avoid the formation of secondary contaminants. These methods are applied for detoxification of:

---liquid and solid organic wastes by incineration in fluidized catalyst bed;

---gas wastes containing SO_2 , organic compounds, Nox in unsteady-state regime ("reverse-process") ;

---vent wastes containing volatile organic admixtures (VOC) in adsorption-catalytic regime;

---chlorinated aromatic hydrocarbons (including dioxins) by means of their adsorption over selective adsorbent-catalysts with the subsequent dechlorination by hydrogen;

---sewage containing organic admixtures and/or nitrogen containing compounds by their oxidation in liquid phase at a pressure over slid catalysts;

---gases containing hydrogen sulfide by selective oxidation to elementary sulfur;

---combined organic radioactive wastes by their incineration in fluidized catalyst bed and recovery of the products of incineration.

Commercial units for purification of gases from vapor of solvents phenol formaldehyde, ethanol, sulfur dioxide on the basis of "reverse-process" have found a wide application. Over 20 units have been built on the basis of this technology in the USA under the license granted by the Boreskov Institute of Catalysis.

Technology of destruction of combined organic radioactive wastes comprise practically all of the achievements in the field of catalytic detoxification: flameless incineration and adsorption inside porous catalyst granules, recovery of nitrogen oxides by ammonia and low-temperature hydrogen oxidation. This process is at the stage of commercial application.

Other methods described in the report are supported by the results of commercial and pilot-plant tests (incineration of wastes in fluidized catalyst bed; adsorption-catalytic methods) or lab tests (catalytic liquid phase oxidation, recovery of chlorinated hydrocarbons).