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Sustainable utilization of clinical solid waste materials with supercritical carbon dioxide

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There is increasing concern on the safe handling and sustainable utilization of hazardous solid waste materials are generating by health care facilities. The potential threat of clinical solid waste materials is the presence of opportunistic human pathogen. Current practices for clinical solid waste management, particularly in developing country, open dumping, landfilling and incineration. These uncontrolled practices of clinical sold waste pose serious health hazards and environmental pollution concern. The clinical sold waste materials would recycle and reuse after it has sterilized with an effective sterilization technology. Supercritcial carbon dioxide ($scCO_2$) is an effective sterilization technology, able to eliminate any short of microbial threat without destroying the heat sensitive plastic and polymer materials. Therefore, the adoption of SC-CO_2 sterilization technology in the management of clinical waste would be benefited to a health care facility in several ways, including: (i) handling and segregation of clinical solid waste can be carried out without any risk of infection; (ii) Sterilized clinical solid waste materials such as medical tools and equipments made from metal or plastic components, plastic materials, paper, cardboard, etc. can be reused and recycled; (iii) reduce the exposure of infection, decrease labor, lower costs, and yield better compliance with regulatory and accrediting agencies. The hospital can both save money and provide a safer environment for patients, healthcare staffs and clinical staffs.

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