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Summary

CARBON FOOTPRINT ANALYSIS OF ENDOSCOPIC DEVICE DISPOSAL STRATEGIES: TOWARDS SUSTAINABLE ENDOSCOPY

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A 2024 German study comparing end-of-life treatment options for three single-use endoscopes found that recycling both devices and packaging had the lowest carbon footprint compared to incineration strategies.

KEY POINTS

- Four end-of-life scenarios were evaluated for urethroscopes, duodenoscopes, and cholangioscopes using ISO 14067 methodology: incineration with energy recovery versus recycling with material recovery, each with different packaging disposal methods.
- Recycling both endoscopes and collection boxes (PCF 2.2) produced the lowest global warming potential, with greenhouse gas emissions driven primarily by the polymeric material composition.
- Recycling offered environmental advantages including reduced greenhouse gas emissions, increased material value retention, minimized toxic residues, and lower operational costs over time compared to incineration.
- The study recommends shifting current end-of-life treatment from incineration to recycling, with eco-design improvements such as lighter weight and easier disassembly suggested to further enhance recyclability.
- This material is relevant for healthcare administrators, environmental officers, and endoscopy unit managers evaluating sustainable disposal strategies for single-use endoscopic devices.

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