CO2 Emissions Calculator for Commercially Reprocessed Single Use Medical Devices

Topic Area(s)

* Greenhouse gasses: linkages, emissions;

Please specify your project approach

Mitigation only

Key message / aim

Scope 3 emissions - especially those from the supply chain - are difficult to measure. We created a free tool for hospitals to use to measure CO2 emissions reductions from using reprocessed SUDs. The calculator is powered by 8 peer reviewed life cycle assessments.

What was the problem?

US and UK estimates show the supply chain to cause the majority of emissions from hospitals. Single use disposable devices are one of the major drivers of CO2. But using regulated, reprocessed SUDs is a solution that is readily available - immediately - to hospitals looking to not only reduce emissions but also be able to document the reductions.

What was the solution?

Dr Cassie Thiel was retained as a consultant to the nonprofit Association of Medical Device Reprocessors to create the calculator. She assessed CO2 emission reduction data from 8 peer reviewed life cycle assessments that show, on average, a 41% reduction in emissions from reprocessed devices compared to their virgin counterparts. She also created a methodology document. AMDR staff managed the development of the calculator in Q1 and Q2 2024. The calculator was released on Earth Day 2024. Exact funding for Dr. Thiel is not disclosed but less than $10,000.

What were the challenges?

We decided to exclude one life cycle assessment because we found that it did not accurately capture data related to emissions in the creation of the virgin product, resulting in outlying data from the other eight peer reviewed studies. To engage hospital sustainability directors and policy makers, we distributed a news release to several thousand personal connections AMDR has made over its 27 years of existence. We gave advance notice to dozens of researchers with whom we work, including at Health Care Without Harm, Yale, etc. We added a QR code to the calculator on the backs of staff business cards and passed out dozens at CleanMed and other conferences.

What helped the intervention implementation/success?

We are accepting feedback now to see what should be tweaked. We would like to add the U.S. EPA's emissions equivalancy calculator to show automatically how many cars are removed from the road, trees planted, etc.

What were the results/Impact?

Patient outcomes:

Other than hopefully slowing the impact of climate change which in turn benefits patient health, there is no connection. This is a tool for the supply chain.

Population outcomes:

Because hospitals are a shockingly large emitter of greenhouse gas emissions, we hope the calculator will encourage more responsible use of materials and impact materials purchased to reduce climate change.

Environmental impact:

Over 9,500 hospitals in 17 countries use regulated, commercially reprocessed devices. In 2023, nearly 31 million reprocessed devices were used. This means that hospitals saved roughly 12,710,000 KgCO2e last year. More precise numbers will be released soon by AMDR.

Social impact:

We believe this simple calculator can move other commonly used hospital supply chain products to also generate LCAs and thus publish a calculator for their products.

Financial impacts:

Reprocessed SUDs cost 30 to 50% less than virgin devices, and we are encouraging the use of more reprocessed SUDs. In 2023, hospitals saved over $450,000,000 by using reprocessed devices in place of their virgin counterparts.

What were the learning points?

This free calculator is of value to every hospital that is making an effort to reduce its carbon footprint. It's also useful for policy makers to realize the benefits of encouraging more reuse. Having a great researcher like Dr. Cassie Thiel helping us was absolutely critical for our success.

Next steps

We have supplied the calculator to policy makers, hospital supply chain purchasing representatives, and sustainability managers at hospitals through our direct contacts and via news release distribution. Other than adding the US EPA Emissions Equivalency Calculator we don't have additional plans yet.

Feedback

The calculator is located free online at <https://amdr.org/reprocessing-carbon-emission-calculator/> and the methodology is located at <https://amdr.org/wp-content/uploads/2024/04/Rationale-and-Methodology-on-Emissions-Reduction-Calculations.pdf>

Want to know more?

General Queries

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Scientific Queries

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Has this case study or story been made public in any form before?Yes

We issued a news release on Earth Day, however it received limited pickup in the media. <https://amdr.org/earth-day-news-amdr-releases-free-co2-calculator/>