

Sharpsmart System



**Sharpsmart**

MAKING HEALTHCARE SAFER

# Sharpsmart

## Innovative Containment Systems



Medicinal  
Sharps



Non-Medicinal  
Sharps



Cytotoxic



Pharmaceutical



Single-use  
metals



# Sharpsmart Features



## WIDE OPENING

One-hand, one-step deposition of sharps. The optimal access geometry of the lid opening, designed with a wide aperture for large and awkward sharps, minimises disposal-related injuries and restricts hand access to the contained waste.



## NO LEAKS

A fixed liquid seal around the rim of the collector lid eliminates leakage of bodily fluids during transport. Container leakage is a common hazard with sharps containers that are not equipped with a leakproof seal. Neoprene gasket in lid eliminates opportunity for blood or body fluid exposure.



## CANNOT BE REOPENED

Side locks are tamper-proof when engaged. This safety feature prevents unauthorised access to the collector contents. Temporary closure allows safe and easy transport within healthcare facility or community.



## MAXIMUM STRENGTH HARDENED PLASTIC

The Medical grade hardened plastic casing of the Sharpsmart collector is completely impenetrable by the contained sharps. The Sharpsmart collector has been test-proven to an amazing 500 cycles proving its durability, sterility and re-usability.



## ELIMINATES OVERFILLING

Once the collector is full, the in-built safety tray is activated into an upright closed position to restrict access and overfilling. Passive overflow protection prevents staff from overfilling container and eliminates risk of overfilling injuries.

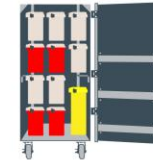
# Inherent Safety Features



Wide Opening



Shatter Proof



Stackable



Overfill Protection



Tamper Proof



Temporary & Permanent Locks



Hand Restriction



Reusable



One Hand Disposal



Leak Proof



Universal Mounting

WALLS, BENCHES AND CARTS TO BE CLOSE TO POINT OF WASTE GENERATION



Aperture continuity across the entire range



## Department Type: 2. Operating Theatre Suites

### CONTAINER & ACCESSORIES SHARPSMART DISPOSAL POINTS

#### Anaesthetic Room – 1 Per Room



Container Type: S32Y Medicinal Sharps



Accessory Type: Standard Floor Stand

#### Anaesthetic Room – 1 Per Room



Container Type: S32B Pharmaceuticals



Accessory Type: Standard Floor Stand

#### Recovery Bays – 1 Per 4 Beds



Container Type: S32Y Medicinal Sharps



Accessory Type: Cartsmart1

#### Single Use Device Disposal – 1 Per Theatre



Container Type: MR64 Metal Recycling



Accessory Type: Accesmart Trolley

#### Theatre Suite – 1 Per Theatre



Container Type: S32Y Medicinal Sharps



Accessory Type: Accesmart Mountsmart

**CLEAN CONTAINER  
STORAGE POINTS**

**FULL CONTAINER  
STORAGE POINTS**

# PROCESSING LOCATIONS



- Over 100 UK hospital sites serviced / 2,000 non-acute
- Over 900,000 exchanges in the UK annually
- 3 x Sharpsmart 'Clean' Production Facilities
- 3 x 'Waste Processing' Facilities
- Further investment planned



Sharps Processing



Clinical Waste Treatment



Proposed Sites

# WORLD-LEADING ROBOTIC CLEANING TECHNOLOGY



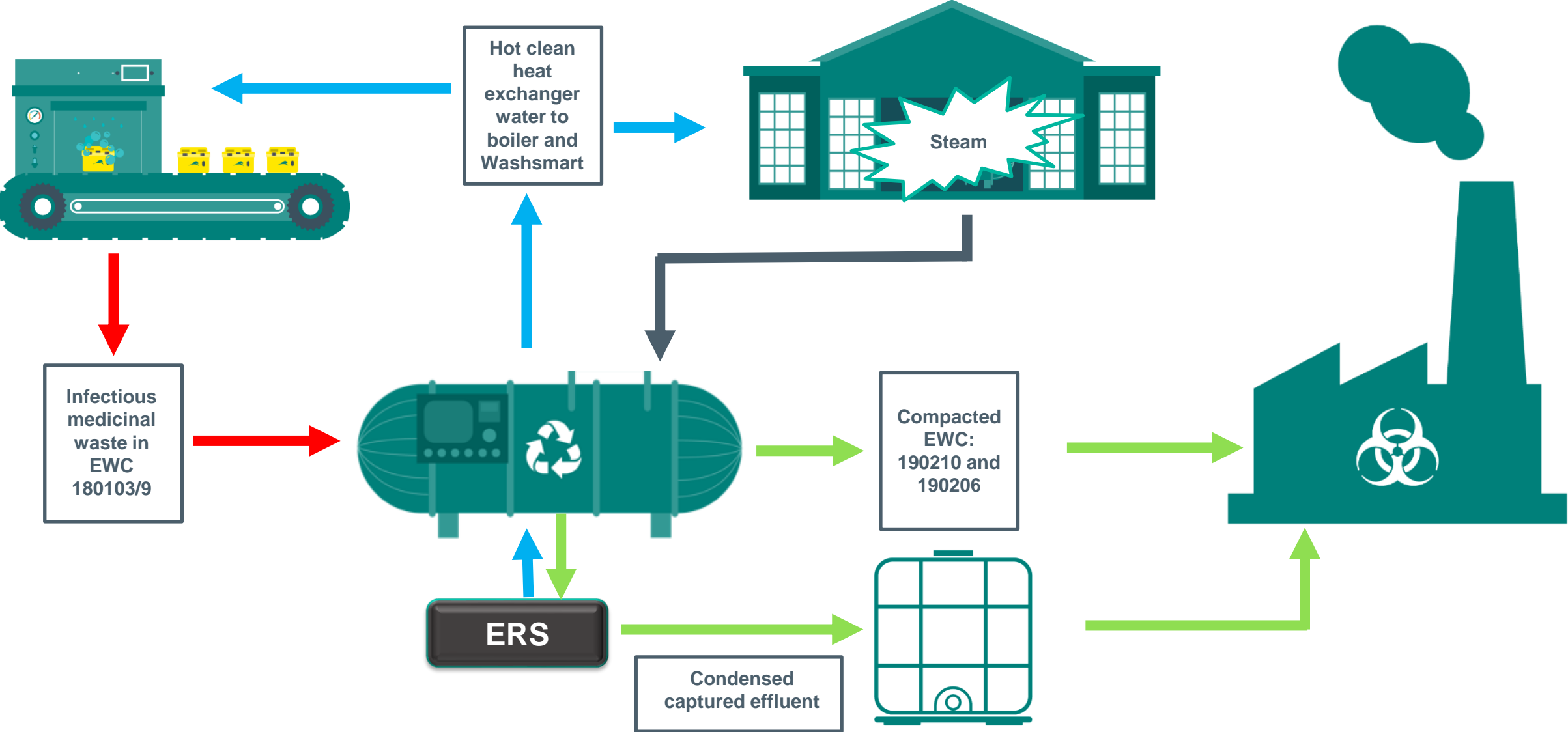
- 1 Weigh & Scan
- 2 Decant & Empty
- 3 High Pressure Flush
- 4 Wash
- 5 Cold & Hot Rinse
- 6 Smartguard
- 7 Drying
- 8 Quality Control Checks

“The Washsmart cleaning process was independently tested by coating 17 Gallon Sharpsmart containers with 6-log blood suspensions of Staph aureus and E. faecalis. On swabbing them after the wash, no challenge organisms were detected – this is a very high level of decontamination.”

Terry Grimmond | Microbiologist, FASM, BAgSc, GrDpAdEd

# CLOSED LOOP SHARPS PROCESSING SYSTEM:

A NON BURN, R-CODE SOLUTION





# Washsmart Process

## 1. Inlet Conveyor

**WEIGH & SCAN | 3 SECONDS**

Sharpsmart containers are loaded onto the inlet conveyor where they are weighed and scanned. The containers automatically stop at the end of the conveyor, ready for the pick & place assembly to lift & position them in the robotic Opener.

A unit mounted on the Opener inlet conveyor is used to alert the operator of any faults and dictate a 'safety zone' during the machines' operation, if an operator enters this zone, the system automatically shuts down.

## 2. Sharps Decanting (Head)

**DECANT & EMPTY | 38 SECONDS**

The Opener secures the container and automatically unlocks and opens the lid. The container is then rotated into a raised hopper and the sharps content is dispensed into the bulk waste container (770L bin). The empty container is now transferred along the outlet conveyor to the Washer.

## 3. Flusher

**HIGH PRESSURE FLUSH | 55°C | 17 SECONDS**

Containers leave the head open and clamped to the conveyer then moves the container into the Washer. Pre-wash temperature water is diverted by nozzles and aimed at the inside base of the container to eliminate remaining contaminants. Wastewater from the Flusher flows down the hopper into a tilting tray. The tilting tray allows water to pass through whilst blocking any larger solid materials. After a pre-set time the tray tilts to decant the solids into a removable bin.

## 4. Wash Chamber

**CONTAINER WASH | 55°C | 16 SECONDS | SOLID HERO**

Containers are thoroughly cleaned using a state-of-the-art multi-stage washing & sanitising system using an Ecolab detergent.

## 5. Rinse Chamber

**COLD & HOT RINSE | 85°C | 15 SECONDS**

Once the container is fully cleaned and sanitised it proceeds into the Rinse Chamber. Containers have an eco (1st rinse), to eliminate all detergent residue using cold water. The containers then have a hot (2nd rinse) to thoroughly clean them.

## 9. Spot Cleaning

**QUALITY CONTROL CHECKS**

Clean containers are spot checked by trained operators. This process ensures that each container is thoroughly cleaned, intact and fully functional. Faulty containers are removed from service.

## 8. Outlet conveyor

**4 SECONDS**

Washed, dried and Smartguarded containers, which are still on the wash racks are released automatically as they are fed out onto the return conveyor. An operator wearing clean gloves unloads the container from the conveyor.

## 7. Spinner

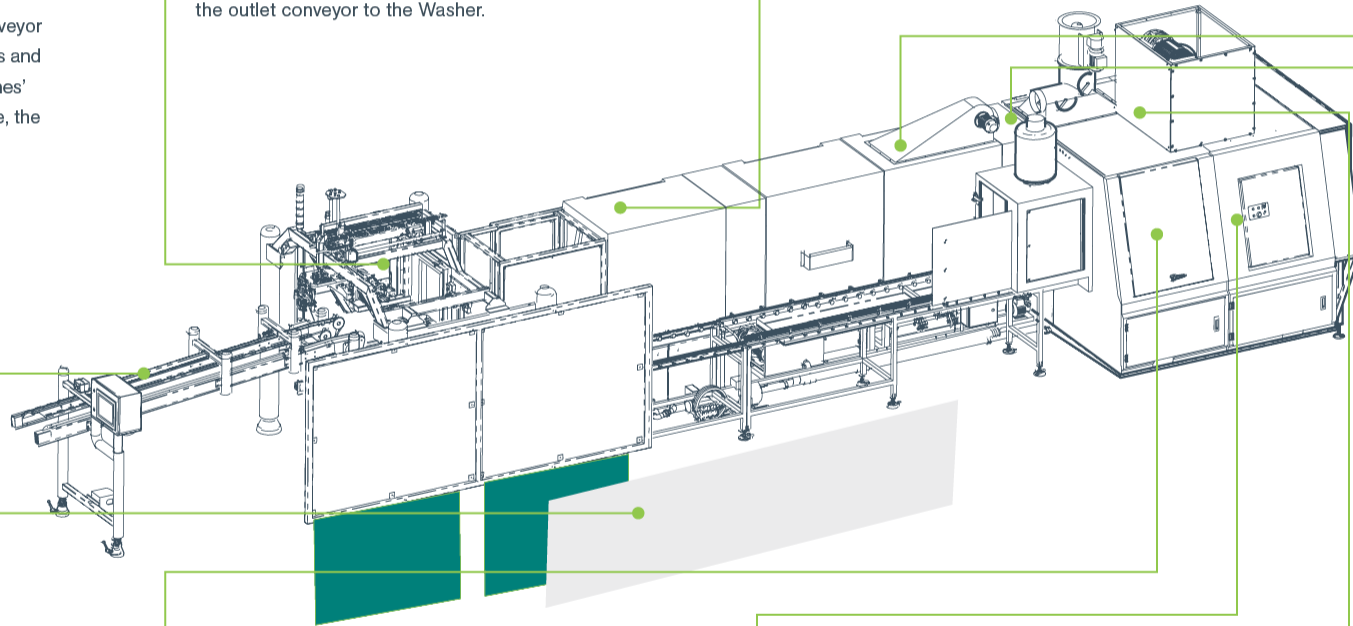
**DRYING | 12 SECONDS**

Once the washing process has finished, containers are lifted onto the Spinner & rotated at approximately 400 RPM, this process removes any remaining liquid from the container.

## 6. Applicator

**SMARTGUARD | 55°C | 4 SECONDS**

Thoroughly washed containers now enter the Spinner/ Applicator. 'Smartguard' is applied to the inside on the container and onto the tray and liner. Smartguard is maintained at 55°C in a vessel that is continuously remixing it. Air jets are used to remove excess water and Smartguard from the wash rack to prevent it entering the Spinner zone.



# METAL RECYCLING

## MR64 and MR14 containers

- Metal disposal constitutes up to 20% of HTI disposal volume in some healthcare establishments, and disposal costs are double what they should be
- Sharpsmart's pioneering metal recycling solution enables **segregation of single use metal instruments** in our reusable MR64 and MR14 containers rather than these items being sent for incineration in single use bins
- Metal items are then sterilised through a less costly alternative treatment process at our facilities and sent for recycling, **diverting this waste from HTI**

**Metal Item Recycling Guide**

Sharpsmart  
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SINGLE-USE METAL INSTRUMENTS	LARGE HEAVY METAL ITEMS	GUIDEWIRES	SINGLE-USE MEDICAL DEVICES
 Clippers & Scissors	 Metal Hip Joints	 Solid Core Wire	 Arthroscopic Shavers
 Curettes	 Metal Knee Joints	 Mandrel Wire	 Arthroscopic Wands
 Forceps	 Ortho Hammer	 Ribbon Wire	 Laparoscopic Cutters
 Dilators			 Ligatures
 Speculums			 Trocars
 Dental Items			 Laryngoscopes

**MR64 Clinismart**  
For single-use metal instruments for recycling

**NO MEDICINES OR CHEMICALS**

**NO DOMESTIC WASTE**

**NO PPE OR DRESSINGS**

**NO SHARPS OR SYRINGES**

L4M201/008

## SHARPSMART PUBLISHED STUDY:

# Sharpsmart: 28% Waste Reduction

### What was the study?

The weight of disposable single-use sharps containers accounts for a significant portion of plastic in the sharps waste stream of healthcare facilities.

The Study '28% Waste Reduction with Sharpsmart Safety Device - a 5 year, 103 Hospital Study' examined the impact of 103 hospitals converting from disposable sharps containers to a reusable sharps containment system (Sharpsmart) in terms of waste reduction and reduction in container exchange labor.

### What were the results?

Conversion to the Sharpsmart system resulted in:

- **28% waste reduction**
- **Total waste reduction of 3.9 tons of waste per 100 beds per annum** (3.5 tons of plastic and 0.4 tons of cardboard)
- **51% reduction in container exchange labor with the larger Sharpsmart collectors**



Authors Grimmond T, Himes E, and Skinner D | Publication CleanMed2009 Conference, May 18-20, 2009 Chicago IL

“Sharpsmarts contribute significantly to healthcare waste reduction strategies.”

- AUTHORS

## SHARPSMART PUBLISHED STUDY:

# Sharpsmart: Impact on Emission & Injuries

Rotherham NHS Foundation Trust

### What was the study?

Disposable single-use sharps containers were replaced with the Sharpsmart reusable containment system.

The 12 month Before-After intervention study determined the effect of the Sharpsmart reusable containment system on greenhouse gas emissions and sharps injuries at the 500 bed Rotherham NHS Foundation Trust Hospital.

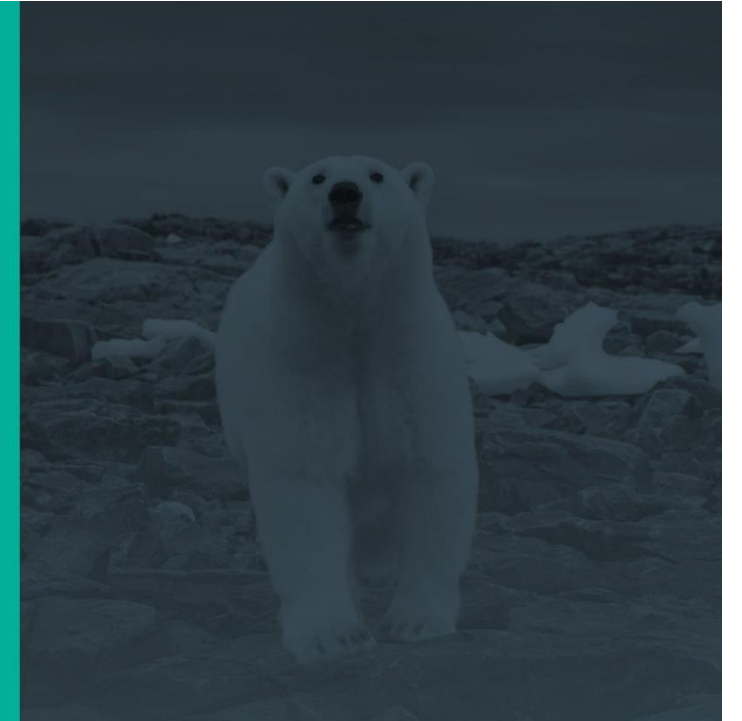


### What were the results?

The Sharpsmart sharps management system:

- **Significantly reduced greenhouse gas (GHG) emissions by 109.8 tonnes CO<sub>2</sub>eq per annum which equated to a 91% reduction in GHG from the facilities' previous disposable sharps containment system**
- **Reduced landfilled waste by 13 tonnes of plastic and 1.3 tonnes of cardboard annually**
- **Eliminated container-associated Sharps Injuries**
- **Reduced sharps containment and disposal costs**
- **Ensured compliance with HTM 07-01 Safe Management of Healthcare Waste**

Publication Inside Hospitals: "Apple of Their Eye" Infection Prevention, October 2011



"Introducing Sharpsmart has brought all aspects of point-of-use, sharps safety and sustainability together. There's a financial benefit with Sharpsmart"

- **DONNA JONES**, Facilities Manager

## SHARPSMART PEER REVIEWED STUDY:

# Sharpsmart: Reducing Greenhouse Gas Emission

### What was the study?

The 2 year study, 'Impact on Carbon Footprint: An LCA of Disposable vs Reusable Sharps Containers in a large US Hospital' was conducted in an 850 bed acute care facility.

The study used a life cycle inventory and a life cycle analysis tool to examine the impact on greenhouse gas emissions (GHG) generated from the supply chain for goods and services, when the hospital replaced disposable sharps containers with Sharpsmart reusable sharps collectors.



### What were the results?

Results showed that in converting to the Sharpsmart reusable system, the facility had per annum:

- **84% reduction in GHG associated with sharps container usage**
- **127 metric tonne reduction in GHG**
- **93% reduction in the manufacture of containers**
- **99.9% reduction in the number of plastic sharps containers landfilled**
- **31% reduction in the number of containers exchanged by staff**
- **99.6% reduction in mass of plastic landfilled**
- **98% reduction in weight of cardboard used**
- **57% reduction in disposal-related sharps injuries**
- **19% reduction in costs of container usage and disposal**

Authors Grimmond T and Reiner S | Publication Waste Management & Research 2012; 30: 639-642



“The 84% reduction of CO<sub>2</sub>eq emissions with the Daniels Sharpsmart system exceeds the 2020 reduction target for US federal hospitals and the 2050 target for UK NHS hospitals. If Sharpsmart reusable collectors were used nationally in the US, we estimate annual US hospital GWP would fall by 64,000 MTCO<sub>2</sub>eq.”

- AUTHORS

# 86% Carbon Emission Reduction with a Reusable Sharps Container

## What was the study?

UK hospitals are seeking greater sustainability. Waste reduction studies using reusable sharps containers are well established, but lack the depth of a Life Cycle Assessment (LCA) of energy emissions for manufacture, transport or processing.

To determine the difference in carbon emissions between reusable and disposable sharps containment systems, we used a Before/After intervention model to track the impact of a 1,250 bed UK Acute-care trust converting from polypropylene disposable sharps container, to an ABS reusable sharps container (Sharpsmart Ltd, Spennymoor UK.) CO<sub>2</sub>e emissions for all life stages were calculated using internationally accepted unit energy consumptions for:

- Plastic pellet manufacture and container manufacture
- Transport to and from hospitals
- Decanting/washing of reusables; attrition replacement of reusables
- Incineration of waste; transport of residues to landfill

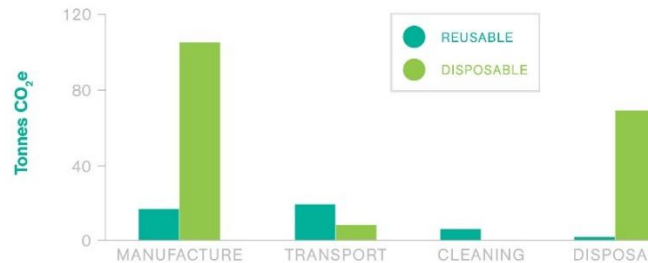
Average CO<sub>2</sub>e was calculated over 10 years.

Data was analysed using CHI2 and significance set at  $p \leq 0.05$ .

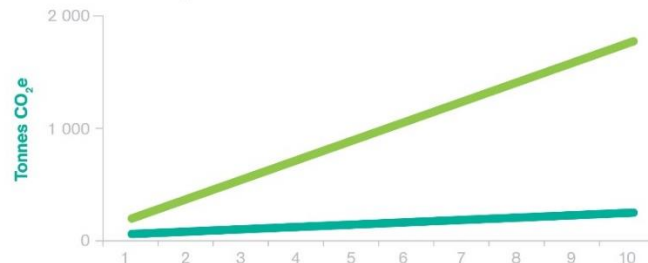
## What were the results?

Manufacturing accounted for the largest CO<sub>2</sub>e reduction, with treatment/disposal next. Transport and processing accounted for a small portion of the LCA. **Reusables saved 157 tonnes of CO<sub>2</sub>e emissions per year (15.1 tons/100 beds/yr)**

### CARBON FOOTPRINT : DISPOSAL VS REUSABLE



### CUMULATIVE CO<sub>2</sub> EMISSIONS



“Over 10 years, 466,190 disposable containers were manufactured vs 1,659 reusables.

Reusable sharps containers provide permanent resource efficiency and waste reduction, and achieve sustainable consumption and production.”

- AUTHORS

# TURNING WASTE INTO A RESOURCE: WHAT HAPPENS TO THE WASTE?

