

BC Cancer – Surrey Radiotherapy Department Nitrile Glove Recycling and Reduction Pilot Project

Project Leads:

- Cara-Lee Claydon, Radiation Therapist
- Adrian White, Manager, Clinical Services

Introduction:

With the generous support of the Energy and Environmental Sustainability (EES) Team the regional Green+ Leader team at BC Cancer – Surrey planned and initiated a pilot project to test the feasibility of safely diverting single use nitrile gloves from the regular waste stream and landfill.

Standing on the shoulders of the pioneering team at St. Paul’s Hospital’s Transfusion Medicine Laboratory¹, the team at BC Cancer – Surrey embarked on an endeavor with **three objectives**:

1. Improve staff education regarding the safe and appropriate use of nitrile gloves.
2. Propose practical recommendations where staff could carefully reduce their nitrile glove use.
3. Safely collect eligible nitrile gloves for recycling, thus diverting them from the landfill.

The pilot project was conducted from January to August 2023.

Project Summary:

Objective #1

This goal was addressed with department staff with the principle of reduction as its foundation. Via regular staff meetings, huddles, and email updates department personnel were reminded of the Point of Care Risk Assessment (PCRA), as developed by PHSA Infection Prevention & Control.²

The PCRA provides clinical staff with a decision support tool that assists them with determining if the patient interaction calls for them to don nitrile gloves or not.

¹ Dawson, Marianne, “St. Paul’s Hospital Glove Recycling Pilot Project”, GreenCare, October 30, 2020, <https://bcgreencare.ca/resource/glove-recycling-casestudy/>. Accessed 3-Dec-2023.

² Provincial Infection Control Network of BC (PICNet), “Point-of-Care Risk Assessment (PCRA), PICNet, July 25, 2023, <https://picnet.ca/wp-content/uploads/Point-Of-Care-Risk-Assessment-Tool-2023-July-25-FINAL.pdf>. Accessed 3-Dec-2023.

Objective #2

An environmental scan of the department determined that many nitrile gloves were not used during patient care encounters, but rather as personal protective equipment (PPE) during the cleaning and disinfecting of work surfaces. The use of “ready-to-use” (RTW) wipes, that are usually either accelerated hydrogen peroxide or quaternary ammonium products, requires the user to don gloves.³

Recommendations were made to staff that glove use for cleaning procedures could possibly be halved if they donned one glove (for the hand that would hold the RTW wipe), rather than two. This practical suggestion was well accepted by staff.

Objective #3

The HPIF award allowed the Green+ Leader team to purchase three Zero Waste Boxes™ from TerraCycle®, which offers a solution to collect nitrile gloves that are free from any biological waste and/or cytotoxic substance contamination.⁴ TerraCycle® breaks the gloves down and uses the material to make new plastic products and durable goods such as shelving, playground equipment, and flowerpots.⁵

After initial planning by the project leads, this project was presented and discussed at several regional senior leadership meetings as part of the standing Green+ Leader’s report. Key regional site stakeholders were engaged to ensure that expectations were agreed to and clear.

Senior operational leadership endorsement was ultimately granted, and implementation was planned for January 30, 2023.

TerraCycle® estimates that each large Zero Waste Box™ can contain up to 5000 gloves. Therefore, our project goal was to safely collect 15000 gloves from the radiotherapy department. With a daily average volume of 200 appointments (Treatment units, CTSIM, RT Patient Review), we estimated that the boxes would be filled in approximately 12-15 weeks (project completion by mid-May 2023)

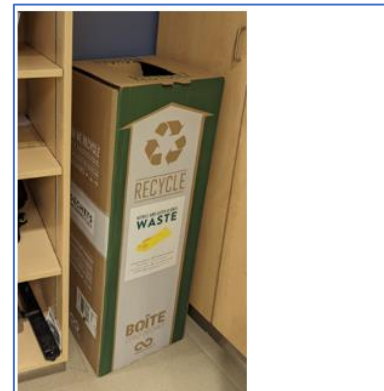


Figure 1: TerraCycle® Zero Waste Box™

³ BC Clinical and Support Services & Workplace Health and Safety, “Selection Guide for Non-Sterile Exam Gloves and Sterile Surgical Gloves”, BCCSS, December 2022, <https://pod.phsa.ca/quality-safety/safety/exposure-prevention/skin-care/Documents/Glove%20Selection%20Guide%202022%20-%20final.pdf>. Accessed 3-Dec-2023.

⁴ TerraCycle, “Disposable Gloves – Zero Waste Box™”, TerraCycle®, December 2023, <https://shop.terracycle.com/en-CA/products/disposable-gloves-zero-waste-box-ca>. Accessed 3-Dec-2023.

⁵ TerraCycle, “Discover our recycling process”, December 2023, https://www.terracycle.com/en-US/about-terracycle/our_recycling_process. Accessed 3-Dec-2023.

Staff engagement and change management followed the Prosci ADKAR^{®6} model. Awareness (aka the “why”) was communicated to impacted staff via email, team huddles, and regular staff meetings. The radiotherapy department at BC Cancer – Surrey has long included a Green+ Leaders standing report in its staff meetings, allowing Cara-Lee a vehicle to keep her colleagues informed. Project champions volunteered and were positioned strategically at various treatment units to assist with staff change management as well as ensure that contamination during the collection process did not occur.

The risk of having eligible gloves disposed in the trash, as well as gloves contaminated with bodily fluids entering the recycling stream, was identified. In addition to staff education and project champions, mitigation tactics also included locating the recycling receptacle far away from the trash bin and including clear signage with directions for staff. (Figure 2) Project leads and

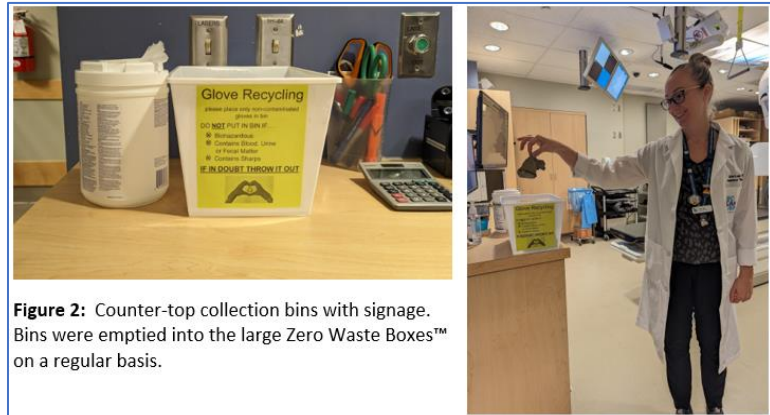


Figure 2: Counter-top collection bins with signage. Bins were emptied into the large Zero Waste Boxes[™] on a regular basis.

champions would regularly transfer the gloves from the small collection bins to the Zero Waste Boxes[™].

By the spring of 2023, sustainment of the pilot project and the team’s efforts was evident as staff who do not provide direct patient care, but use RTU wipes to clean their workstations, wanted to join the recycling project. Staff from Dosimetry, Patient & Family Counselling, Oncology Nutrition, and Clerical all united in the effort.

The heightened enthusiasm was also apparent as the Zero Waste Boxes[™] were filled to a significantly high level, much higher than originally anticipated. When the three boxes reached their capacity in August 2023 each weighed approximately 50kg. An unopened box of 250 medium-sized nitrile gloves weighs 1kg, therefore the department diverted approximately **37,000 gloves**.

To put this into perspective, 150kg is approximately the weight of:

- a giant panda bear,
- two kegs of beer,
- a sumo wrestler.

An abundance of gloves was diverted from the landfill, used to create new products, and hopefully kept out of our oceans.⁷

⁶ Prosci Inc, “The Prosci ADKAR Model”, 2023, Prosci, <https://www.prosci.com/methodology/adkar>. Accessed 3-Dec-2023.

⁷ Canadian Geographic, “A plastic pandemic: The results of COVID-19 PPE pollution”, May 13, 2021, Canadian Geographic, <https://canadiangeographic.ca/articles/a-plastic-pandemic-the-results-of-covid-19-ppe-pollution/>. Accessed 3-Dec-2023.

Next Steps:

1. BC Cancer – Surrey will sustain its efforts in the radiotherapy department and begin to explore opportunities to expand safe nitrile glove collection and recycling to other viable functional areas.
2. BC Cancer – Surrey Green+ Leaders to share they success with BC Cancer’s Planetary Health Team to see how similar initiatives can be planned an implemented at the other regional cancer facilities.
3. Explore opportunities to work with the PHSA Supply Chain and see how the vendor can be engaged to participate in nitrile glove, and other personal protective equipment, collection, and recycling. Some manufacturers and vendors already offer these services⁸, but the current vendor of our nitrile gloves does not.

Conclusion and acknowledgements:

The pilot project was a resounding success and exceeded the expectations of the project leads and all stakeholders. This success would not have been possible without the support of:

- Funding from the EES team via the PHSA Health Promotion Initiative Fund (HPIF)
- Key members of the BC Cancer – Surrey Radiotherapy Department (Radiation Therapists, Oncology Nurses, and Patient Care-Aides)
- BC Cancer – Surrey Senior Leadership Team
- GreenCare and the Green+ Leader’s program

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⁸ Kimberly-Clark Professional, “Rightcycle by Kimberly-Clark Professional”, December 2023, <https://www.kcprofessional.com/en-ca/solutions/rightcycle-by-kimberly-clark-professional>. Accessed 3-Dec-2023.