# 2020 Viva Tube Life Cycle Analysis Summary

The Life Cycle Report analyses the impacts of three Viva tubes and four common industry tubes. The scope of the study is cradle-to-gate with end of life, which means it includes raw material extraction and processing (including transportation), manufacturing, and waste treatment of the tubes.

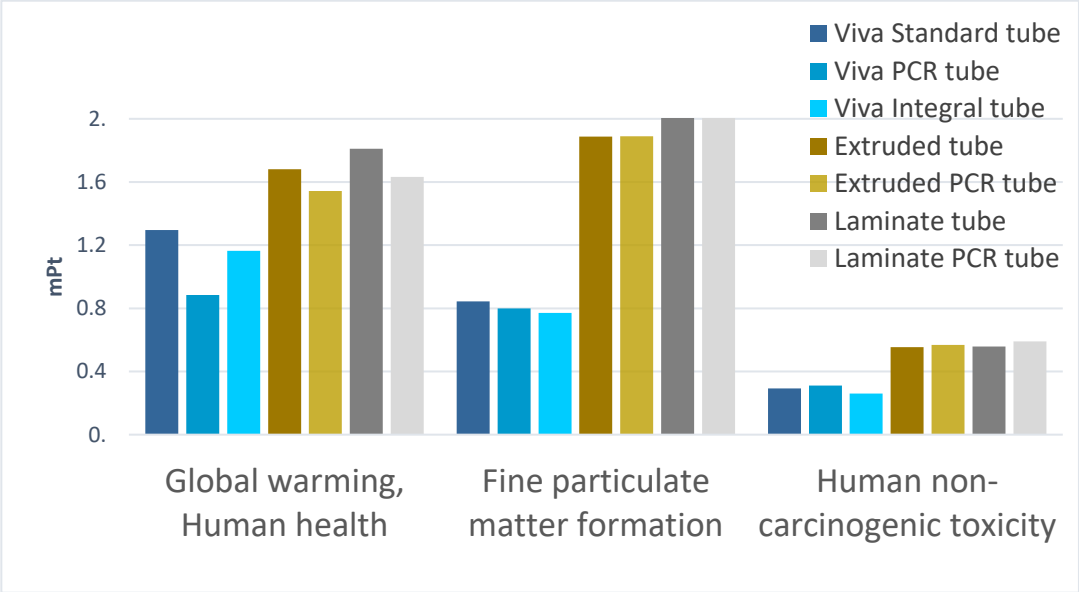
Three categories contribute over 80% of the overall environmental impact of plastic tubes:

- **global warming** – the impact of the ongoing rise of the Earth's average temperature on human health and ecosystems
- **fine particulate matter formation** – the impact of air pollution on human health
- **human non-carcinogenic toxicity** – the accumulated impact of chemicals on the human food chain

Viva tubes show significantly lower impacts than industry comparable tubes in all three of these categories:

- Up to **51% lower** impacts on global warming (Viva PCR over Laminate PCR)
- Up to **63%** lower impacts on fine particulate matter formation (Viva Integral over Laminate)
- Up to **53%** lower impacts on human non-carcinogenic toxicity (Viva Integral over Laminate)

*Viva tubes show significantly lower environmental impacts*




## The Viva Difference

Unlike most industry tubes, Viva tubes have a **mono-material design**: tube + cap + in-mold label are all made of **polypropylene (PP)**, the lightest plastic by volume, and the lowest impact category. As a mono-material tube, Viva's tubes are **designed for recycling** to support the circular plastic economy. In addition, Viva tubes show benefits from the following:

5 PP

- ✓ **Cleaner power generation** that contributes less to global warming during manufacturing (more than 90% of Ontario's electricity production is carbon-free)
- ✓ **Vertical integration** including caps and labels manufactured in-house, eliminating transportation to and from additional locations
- ✓ **Efficient injection-molding process** that minimizes manufacturing steps and waste
- ✓ **Less plastic** than industry comparables, reducing raw material and transportation impacts
- ✓ Options for **high content post-consumer recycled material (PCR)**
- ✓ Significantly **lower impacts on fresh water and marine water**

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## The Lightweight Advantage

*30% less plastic = 30% to 63% lower impacts in the 3 largest impact categories*

Viva's Integral tube design is **'lightweighted'**, integrating the cap and shoulders to use **30% less plastic**. Thirty percent less plastic has **30% to 63% lower impacts in the three largest impact categories**. Impacts on water consumption, aquatic ecosystems, marine eutrophication and freshwater eutrophication (the effects of detrimental algae on freshwater and marine systems) are **71% to 83% lower** than industry comparable tubes.

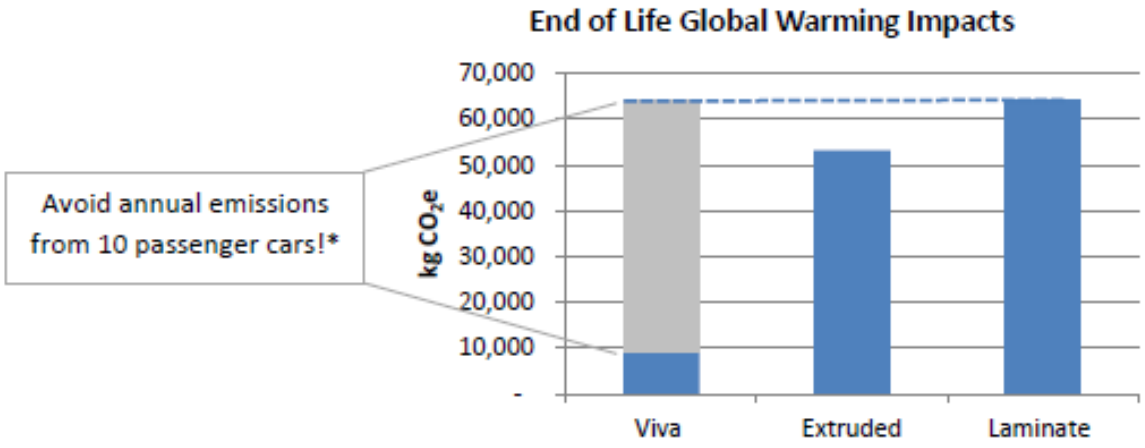
## The Power of PCR

*Viva's PCR tubes show 44% to 62% lower impacts than industry PCR tubes*

Viva's PCR tube contains up to **65% post-consumer recycled material** in the tube and up to **100% in the cap**. This high PCR content shows **44% to 62%** lower impacts than industry PCR tubes in the three largest impact categories. Similar to Viva's Integral tube, Viva's PCR tube shows estimated impacts of **65% to 77% lower** than industry comparable PCR tubes on water consumption, aquatic ecosystems, marine eutrophication and freshwater eutrophication.

## Recycling

Viva's tubes are **designed for recycling**. Recycling 1 million Viva tubes, compared to 1 million industry tubes, **saves enough household energy to run 100 homes for over 3 months***, and helps **divert plastic from landfill and waterways**.




*Based on data from EPA Residential Energy Consumption Survey 2009 and EPA Office of Transportation