

ENVIRONMENTAL FOOTPRINT REDUCTION STUDY RESULTS

EDUCATION / RETAIL & HEALTHCARE



ENERGY
93% / 96%



CO₂ EMISSIONS
92% / 93%



OZONE
89% / 94%



SMOG
96% / 97%



ACIDIFICATION
87% / 91%



EUTROPHICATION
41% / 58%



PARTICULATE
88% / 90%

ec-H2O NanoClean™ Technology

Compared to conventional packaged daily-use cleaning chemicals, utilizing ec-H2O NanoClean™ reduces the impact of cleaning operations on the environment in seven key categories according to a third-party study by Ecoform TM, LLC.

REDUCTION OF ENVIRONMENTAL IMPACT VERSUS CONVENTIONAL DAILY CLEANING CHEMICALS

LCA CATEGORY	EDUCATION	RETAIL/HEALTHCARE
ENERGY	93%	96%
CO ₂ EMISSIONS	92%	93%
OZONE	89%	94%
SMOG	96%	97%
ACIDIFICATION	87%	91%
EUTROPHICATION	41%	58%
PARTICULATE	88%	90%

LIFE-CYCLE EVALUATION SCENARIOS

PARAMETER	EDUCATION	RETAIL/HEALTHCARE
CHEMICAL DILUTION RATE – OZ/GAL	1	1
LIQUID FLOW RATE – GAL/MIN	0.4 Chemical-based 0.12 ec-H2O NanoClean	0.4 Chemical-based 0.12 ec-H2O NanoClean
FLOOR SCRUB RATE – SQ FT/HR	9,274 ^a	9,274 ^a
FLOOR AREA CLEANED – SQ FT/DAY	25,000	25,000
FREQUENCY OF CLEANING – CYCLES/YR	200 Education (5 days/wk, 40 wks/year)	365 Retail/Health Care (daily)

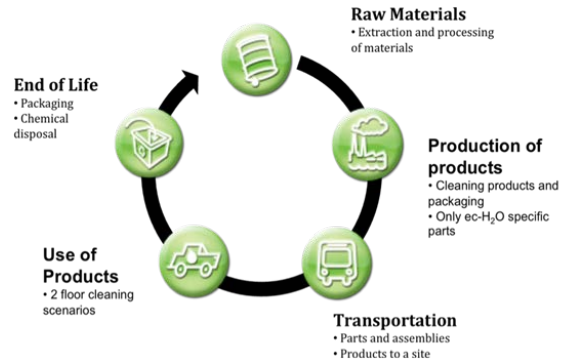
^aThe official ISSA 612 Cleaning Times Book, 2014.

A T300 scrubber was used for this analysis. The life-cycle analysis was performed using version 6 of the GaBi Life-Cycle Software. Secondary data from GaBi and Ecoinvent datasets, supplemented by proprietary Ecoform data sets, comprised the entirety of the life-cycle inventory data.

ENVIRONMENTAL FOOTPRINT REDUCTION QUESTIONS & ANSWERS

WHAT IS A LIFE-CYCLE ANALYSIS?

Life-cycle analysis is a methodology used to identify and quantify the environmental impacts of a product, service, or activity, across its life-cycle. The scope of the study included the items listed in the diagram to the right:



WHO PERFORMED THE LIFE-CYCLE ANALYSIS?

Jack Geibig, president of Ecoform, LLC, an independent company that focuses on the environmental performance of companies and their products and processes.

WHERE CAN I READ THE ENTIRE LIFE-CYCLE ANALYSIS REPORT FOR ec-H2O NanoClean?

Go to www.tennantco.com to download the full Life-Cycle Analysis for the ec-H2O NanoClean technology.

IMPACT CATEGORY	REDUCTION OF	CREATED BY	HARMFUL TO
ACIDIFICATION	kg SO ₂	Combustion processes in electricity and heating production and transportation	Fish and forests, by lowering the pH of water and soil
CO ₂ EMISSIONS	kg CO ₂	Combustion of fossil fuels	Atmosphere (global climate change)
ENERGY	MJ	Total energy required to manufacture and use product	Atmosphere (global climate change)
EUTROPHICATION	kg PO ₄	Nutrients from discharged waste water and fertilized farmland	Fish and other life in the aquatic ecosystem, due to oxygen deficiency
OZONE DEPLETION	g CFC	Emission of halocarbons	Humans, causing increased frequency of skin cancer and damage to plants
PARTICULATE	kg PM _{2.5}	Combustion of materials	Human respiratory systems, resulting in chronic respiratory illness
SMOG	kg NO _x	Reduction of VOCs and nitrogen oxides in the presence of heat and sunlight	Human respiratory systems, resulting in respiratory illness including chronic bronchitis and emphysema

Learn more about ec-H2O NanoClean and other innovations in cleaning. Contact Tennant today or visit our website at www.tennantco.com.

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