



ENVIRONMENTAL FOOTPRINT REDUCTION STUDY RESULTS

EDUCATION / RETAIL & HEALTHCARE



ENERGY **93% / 96%**



CO₂ EMISSIONS **92% / 93%**



020NE **89% / 94%**



SMOG **96% / 97%**



ACICIFICATION 87% / 91%



EUTROPHICATION 41% / 58%



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	9,274ª	9,274ª
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.

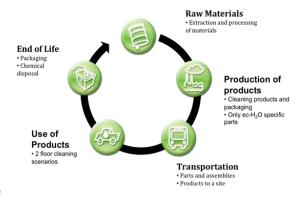
ENVIRONMENTAL FOOTPRINT REDUCTION QUESTIONS & ANSWERS

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 PO4	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 PM2.5	Combustion of materials	Human respiratory systems, resulting in chronic respiratory illness
SMOG	kg NOx	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 <u>tennantco.com</u>.

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