



**aci**

# Sustainability Report 2013

american cleaning institute®  
*for better living*



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### About ACI

The American Cleaning Institute® (ACI) [www.cleaninginstitute.org](http://www.cleaninginstitute.org) is the Home of the U.S. Cleaning Products Industry® and represents the \$30 billion U.S. cleaning products market. ACI members include the formulators of soaps, detergents, and general cleaning products used in household, commercial, industrial and institutional settings; companies that supply ingredients and finished packaging for these products; and oleochemical producers. ACI and its members are dedicated to improving health and the quality of life through sustainable cleaning products and practices.

If you have any questions about the 2013 ACI Sustainability Report, please contact Brian Sansoni, Vice President, Sustainability Initiatives at 202.662.2517 or [bsansoni@cleaninginstitute.org](mailto:bsansoni@cleaninginstitute.org) or Melissa Bernardo, Manager, Sustainability Programs, at 202.662.2518 or [mbernarado@cleaninginstitute.org](mailto:mbernarado@cleaninginstitute.org).

ACI is located at 1331 L Street NW, Suite 650, Washington, DC 20005

## A Message from ACI President and CEO Ernie Rosenberg



**“For Better Living.”** That’s not just the American Cleaning Institute tagline. It’s a phrase that summarizes the positive impact cleaning and hygiene products make on our daily lives.

The sustainability mission for ACI is to benefit society and improve quality of life through hygiene and cleanliness – by driving sustainability improvements across our industry and throughout the supply chain. Our members’ products help maintain the health and well-being of billions of people across the planet.

The companies that formulate cleaning products and produce the ingredients that make them effective take their product stewardship responsibilities very seriously. That’s why you see so many of our members building sustainability platforms across their businesses and throughout their supply chains.

With leadership from our member companies, ACI sustainability initiatives are demonstrating transparency by reporting aggregated environmental metrics data, using sound science and outreach to show how cleaning products and ingredients enhance health and quality of life and communicating ways in which consumers can use these products safely and responsibly.

I hope you will find the ACI Sustainability Report and its online companion to be useful and informative. The online version also provides insights into how many ACI member companies are operating sustainably throughout the year.

Of course there are environmental, social and economic challenges that confront us each day and will continue to arise tomorrow. There are no easy answers, but I believe that our industry – in the U.S. and around the world – is tackling these challenges responsibly and creatively, while also supporting consumers as they meet challenges in their own lives. Through research, science, technology and innovation, the women and men of our industry are working to embed sustainability throughout their companies and in the products they manufacture. The ACI Sustainability Report provides an overview of these efforts.

We look forward to sharing this information and receiving your feedback in the months and years ahead.

A handwritten signature in blue ink that reads "Ernie Rosenberg". The signature is written in a cursive style and is located in the bottom right corner of the page.



# American Cleaning Institute: Principles for Sustainability



## **ACI Sustainability Definition:**

The ability to improve the quality of life for this and future generations, by creating products that promote hygiene and cleanliness, are environmentally sound and are economically successful.

## **ACI Sustainability Mission:**

To benefit society and improve the quality of life through hygiene and cleanliness by driving sustainability improvements across our industry and throughout the supply chain.



## **Preamble: Principles for Sustainability**

The members of the American Cleaning Institute are committed to the continuous enhancement of human health and the quality of life through the responsible formulation, production, sale and use of cleaning products and ingredients.

The members of the American Cleaning Institute will strive to meet the following commitments to advance human health and environmental quality, social well-being, and economic growth. ACI will support its members in meeting these commitments.



## Human Health/Environmental Sustainability

- To only market products that have been shown to be safe for humans and the environment, through careful consideration of the potential health and environmental effects, exposures and releases that will be associated with their production, transportation, use and disposal.
- To promote transparent communication of safety, handling and environmental information across the chain of commerce.
- To support basic research to resolve uncertainties around human and environmental safety when they arise.
- To obey the spirit and intent of all national laws and regulations.
- To promote sustainable innovations that will help reduce the overall environmental impacts of our industry.

## Economic Sustainability

- To contribute to value creation, including economic prosperity and continuity for the industry's shareholders, employees and communities.
- To add value for the consumer through continuous product innovations.

## Social Sustainability

- To contribute to a better quality of life for our consumers, business partners, employees and the communities in which we operate.
- To develop products and ingredients that effectively deliver claimed benefits.
- To promote the safe use of our products with the public.
- To support society's efforts to enhance public health and well-being through improved hygiene and sanitation.
- To maintain a high level of product stewardship throughout the chain of commerce.
- To operate our manufacturing facilities with due regard to the health and safety of our employees, the communities in which we operate and the wider environment.

## ACI Consumer Education & Outreach Partnerships: Enhancing Good Health and Good Hygiene



Throughout the year, ACI partners with public and private groups – including family and consumer science educators, health and safety professionals, medical experts, government agencies and charitable organizations, to name just a few – to educate individuals, families and communities about the positive contributions that cleaning products make to better and healthier living.



### Doing Our Part to Help Clean the World®

ACI is a proud partner of Clean the World ([www.cleantheworld.org](http://www.cleantheworld.org)), which collects and recycles – in a safe and environmentally-friendly way – discarded soaps, shampoos, conditioners and other hygiene products from more than 1,982 hotels and 493,395 guestrooms. This non-profit organization distributes these products to those in need to help prevent disease and avoidable death in areas where essentials for cleanliness are otherwise not readily available.

*ACI Board Chair Catherine Ehrenberger (center), Amway, helps put together hygiene kits for a local charity in Orlando, FL in partnership with Clean the World at the 2013 ACI Convention.*



Attendees at the 2013 ACI Annual Meeting & Industry Convention participated in a serve and learn opportunity with Clean the World to assemble 2,200 hygiene kits that were donated to the Families in Transition (FIT) program. FIT provides assistance to homeless children and their families in Seminole County, Florida. ●

## Supporting Cleaning for a Reason®

ACI believes that a clean home environment is important and it's even more important to women with cancer. That is why ACI has been a proud partner of the Cleaning For A Reason Foundation ([www.cleaningforareason.org](http://www.cleaningforareason.org)) since 2008. The foundation provides free household cleanings for women undergoing treatment for cancer.

During the 2012 and 2013 Industry Conventions, members participated in Charity Golf Tournaments and the Quack for a Reason Charity Duck Races to raise money to help the foundation serve more cancer patients. ●



*For the second year in a row, Shell Chemical LP sponsored the "Quack for a Reason" Charity Duck Race at ACI's Convention, which benefits Cleaning for a Reason.*

*From left: Ms. Quack for a Reason; Kimberly Stiener, MonoSol; and ACI Board member Rutger Beelaerts, Shell Chemical LP.*

## Warm Hands, Warm Hearts – Helping Those Affected by Superstorm Sandy

ACI and the American Association of Family & Consumer Sciences ([www.aafcs.org](http://www.aafcs.org)) launched "Warm Hands, Warm Hearts," an effort to gather gloves, mittens and hand soap for those affected by Superstorm Sandy. More than 1,750 pairs of gloves and mittens were gathered from across the United States and Canada.

These gloves, mittens and bars of soap were sent to the Sandy Relief Center in the Borough of Sayreville, New Jersey. This volunteer effort helped one of the communities hardest hit by the storm. ●



*In partnership with the American Association of Family and Consumer Sciences, more than 1,750 pairs of mittens and gloves, along with soap bars, were collected to help families affected by Superstorm Sandy.*

## Promoting the Benefits of Good Hygiene in Our Schools and Communities

Educating students about the importance of good hand hygiene is the primary objective of “Healthy Schools, Healthy People: It’s a SNAP” (School Network for Absenteeism Prevention), a joint initiative of ACI and the Centers for Disease Control and Prevention (CDC). Healthy Schools, Healthy People ([www.itsasnap.org](http://www.itsasnap.org)) represents ACI’s ongoing commitment to support efforts enhancing public health, a commitment that began in 1926 with a study focused on handwashing behaviors in schools.



*In 2013, Litchfield (MN) High School students and FCCLA chapter members (from left) Kalley Spreiter, Ali McGraw, and Abby Roediger were honored by the industry for their school hygiene education efforts.*



*From left: Susanville (CA) student Clarissa Faustino, local Public Health Educator Bethany DuVarney, and student Mykela Nimmo meet with their congressman, U.S. Rep. Tom McClintock, along with ACI’s Martha Chapin, to share their hand hygiene program that earned them top recognition in the 2012 Healthy Schools, Healthy People program.*

Since 2002, thousands of schools have been involved in the program to reduce absenteeism and improve public health. Healthy Schools, Healthy People has honored student-led classroom projects for their efforts to encourage handwashing during the school day and in their local communities.

In 2012, the drama club at Diamond View Middle School (Susanville, California) created a comedic skit called “Jeremy Germ and the Germinators.” This effort was part of an after-school project with the local Public Health Department to spread the message of the importance of proper handwashing throughout the school and the community.

In 2013, three sophomores from Litchfield (Minnesota) High School – all members of **Family, Career and Community Leaders of America (FCCLA)** – earned the top national award for their movie, “Handwashing Horrors.” The students created the movie to emphasize the importance of handwashing in order to make the school a safer environment. ●



## Honoring Those Who Are “Teaching Clean”

ACI’s [Clean and Healthy Families & Communities National Award](#) recognizes outstanding educational programming by members of the [National Extension Association of Family and Consumer Sciences \(NEAFCS\)](#). The organization uses relevant ACI educational materials to promote the connection between cleanliness and health to individuals, families and communities. In 2012, the University of Tennessee Extension Agent Carla Youree Bush was honored for creating a Clean and Healthy Home training program. With the cooperation of the local housing authority, Carla held a “get together” with friends and neighbors to teach the importance of a clean, healthy home and demonstrated simple, easy ways to clean, using ACI education materials. The housing authority director later reported that, as a result of the “Clean and Healthy Home” training, housing conditions improved for those who implemented the cleaning techniques they were taught. ●



*University of Tennessee Extension Agent Carla Youree Bush (left) is given ACI’s 2012 Clean and Healthy Families & Communities National Award by NEAFCS President Amy Peterson.*

## Better Living Through Safe Laundry Practices

As consumers were introduced to single-load liquid laundry packets, ACI educated individuals and families about the safe and responsible use of these this new laundry product form. ACI joined forces with consumer educators, government agencies, and health and safety officials to share educational materials containing laundry safety messages throughout the United States. Experts from The Dow Chemical Company, Henkel Consumer Goods Inc., The Procter & Gamble Company and ACI shared their expertise in a December 2012 webinar to promote better laundry practices in the home. ●



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## ACI Science & Research: Pathways to Product Stewardship



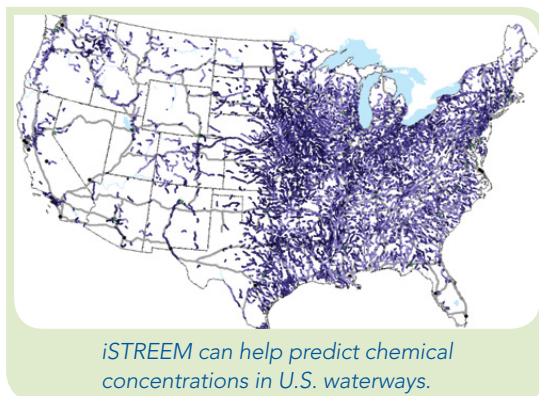
Year in and year out, scientific and research programs contribute to the tools, data and insight ACI member companies use to assess the safety and effectiveness of cleaning products and their ingredients. The work that ACI does is particularly focused on answering the questions consumers and regulators are asking. ACI and our members share detailed technical information with a variety of audiences as part of our commitment to transparency and product stewardship.

Additional information about these scientific research programs can be found at [ACIScience.org](https://www.aciscience.org).



### Sharing a Tool to Predict Chemical Concentrations in Waterways

ACI's **iSTREEM**<sup>®</sup> is a web-based computer model which forecasts chemical concentrations in U.S. waterways resulting from the use of those chemicals in consumer products that are disposed down the drain. Available to manufacturers and the public for a number of years, ACI has provided one-on-one briefings to the U.S. Environmental Protection Agency (EPA) and the U.S. Food and Drug Administration (FDA) on the functionality and capabilities of iSTREEM. In addition, iSTREEM was recently featured among presentations made at EPA's Office of Pesticide Program's semi-annual Environmental Modeling Public Meeting. ●



## ACI Cleaning Product Ingredient Inventory

In 2012, ACI introduced a detailed online inventory of ingredients used in consumer cleaning products as part of its Cleaning Product Ingredient Safety Initiative. The [Cleaning Product Ingredient Inventory](#) features a list of more than 900 chemical ingredients used by ACI members to manufacture consumer cleaning products, including laundry care products (e.g., laundry detergents, fabric softeners), dish care products (automatic dish detergents, hand dish detergents) and hard surface cleaners.

“The Cleaning Product Ingredient Safety Initiative is one of ACI’s many efforts to promote the responsible management of our members’ products and the safety of the ingredients in them,” said Dr. Paul DeLeo, ACI Senior Director, Environmental Safety. “The first step in this initiative is to compile and make publicly available a comprehensive inventory of ingredients used among its members in the formulation of home use consumer cleaning products sold in the United States. Now any safety expert looking at the uses of a chemical will know if it’s used in cleaning products.” ● ○ ○



The screenshot shows the ACI Science website interface. The main content area is titled "American Cleaning Institute Cleaning Product Ingredient Inventory". It includes sections for "What is the ACI Ingredient Inventory?", "How was the ACI Ingredient Inventory developed?", and "Ingredient Inventory". The "Ingredient Inventory" section contains a table with columns for "Ingredient Name" and "CAS Registry Number(s)".

Ingredient Name	CAS Registry Number(s)
Abies Alba Leaf Oil	8021-23-0 8021-28-1
Abies Balsamea(Balsam Canada) Extract, Abies Balsamea(Balsam Canada) Needle Oil, Abies Balsamea (Balsam Canada) Resin	8007-47-4 8005-34-3
Acetic Acid	64-19-7
Acetic acid, ammonium salt	831-61-8
Acetic acid, calcium salt	62-54-4
Acetic acid ethanyl ester, polymer with octane	25820-49-9
Acetic acid, magnesium salt	142-73-3

*ACI's Ingredient Inventory features more than 900 ingredients used in consumer cleaning products.*

“...more than **900** chemical ingredients, including laundry care products and hard surface cleaners, are **featured** on the list.”

## ACI-Chaired Science Forum Provides In-Depth Research Insights on Asthma

The Asthma Science Forum, sponsored by a coalition of industry trade associations and chaired by ACI, released a detailed [report](#) exploring the relationship between asthma and exposure to consumer products and their ingredients.

*Asthma Report: Manufacturers want to examine the best science available.*

Report from the Asthma Science Forum

May 10, 2011

### Industry Sponsored Asthma Science Forum

Report of Workshop held May 10, 2011  
Renaissance Capital View, Arlington, Virginia

Submitted to:  
Asthma Science Forum Steering Committee

Submitted by:  
Toxicology Excellence for Risk Assessment  
(Contact: Jacqueline Patterson, [patterson@tera.org](mailto:patterson@tera.org))

January 17, 2012  
Final

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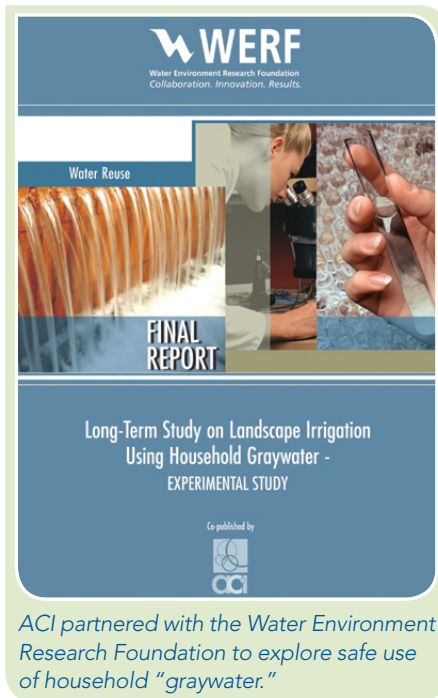
This unique report, based on research presented at the 2011 Asthma Science Forum held in Arlington, VA, concluded that the database of current studies is not sufficiently robust enough to demonstrate a causal relationship between product exposures and new-onset asthma. But some evidence does exist that suggests some exposures could trigger asthma-like symptoms in individuals with pre-existing asthma and/or bronchial hypersensitivity, providing a path forward to further work in this area. ● ○ ○

“Manufacturers want to examine the **best science** available and identify where data gaps exist to ensure that products are used **safely and beneficially...**”

## Landscape Plants Benefit from Watering with Household Graywater

Graywater – wastewater primarily from bathing and laundering – makes up nearly 50% of a typical household’s wastewater and could supply 100% of the residential irrigation demand in some areas of the country. As more households turn to graywater for their irrigation needs, it is important to understand what compounds are in graywater, what happens to them in the environment, and what potential impacts graywater may have on soil quality, groundwater quality, and plant and human health.

Research from ACI and the Water Environment Research Foundation found that many plants around the home do well under long-term graywater irrigation and may receive benefits beyond just having their thirst quenched. This information helps homeowners sustain their landscape plants. ● ○ ○



*ACI partnered with the Water Environment Research Foundation to explore safe use of household “graywater.”*

“Graywater...could supply **100%** of the residential irrigation demand in some areas of the country.”

## Expanding Knowledge on Cleaning Products and Ingredients

Year-round, ACI co-authors and otherwise supports research presented in peer-reviewed scientific journals that expand our knowledge on the safety and effectiveness of products and ingredients and how they interact with a variety of environments. These efforts help ACI continually improve the practices and information used by cleaning product manufacturers to ensure the safety of their products. A sampling of the most recent research follows:

Science of the Total Environment 463–464 (2013) 808–810  
Contents lists available at ScienceDirect  
Science of the Total Environment  
journal homepage: www.elsevier.com/locate/scitotenv

**Occurrence and risk screening of alcohol ethoxylate surfactants in three U.S. river sediments associated with wastewater treatment plants<sup>1</sup>**

Hans Sanderson<sup>a</sup>, Remi van Compernelle<sup>b</sup>, Scott D. Dyer<sup>c</sup>, Bradford B. Price<sup>c</sup>, Allen M. Nielsen<sup>d,1</sup>, Martin Selby<sup>e</sup>, Darci Ferrer<sup>f</sup>, Kathleen Stanton<sup>1\*</sup>

<sup>a</sup> Archer Technology, 4800 Roswell, Atlanta  
<sup>b</sup> Gulf Chemical Industries (GCI), Inc., Houston, TX 77058, USA  
<sup>c</sup> The Procter & Gamble Company, Cincinnati, OH 45233, USA  
<sup>d</sup> Gulf South America, Inc., Houston, TX 77058, USA  
<sup>e</sup> Procter & Gamble, Cincinnati, OH 45233, USA  
<sup>f</sup> American Cleaning Institute, Washington, DC 20005, USA

**ARTICLE INFO**

**Article history:**  
Received 20 February 2013  
Received in revised form 6 May 2013  
Accepted 14 May 2013  
Available online 28 May 2013

**Editor:** Dennis Korte

**Keywords:**  
Alcohol ethoxylates  
Environmental risk  
Aliphatic alcohols  
Monitoring  
Weight-of-evidence assessment

**ABSTRACT**

Alcohol ethoxylates (AE) are high production volume (HPV) chemicals globally used in detergent and personal care products and are found in wastewater for the household and personal care industries. Commercially available products are primarily composed of a mixture of several homologs of varying carbon chain length and degree of ethoxylation. Homologs that are not ethoxylated are also known as aliphatic alcohols or simply fatty alcohols (FA). This group of homologs represents a special concern in the context of environmental risk, as these are also abundant and ubiquitous naturally occurring compounds (e.g. animal fats and in human feces). Hence, in a risk assessment one needs to distinguish between the natural background concentrations and the added contribution from anthropogenic activities. We conducted a weight-of-evidence risk assessment in three rivers, determining the exposure and potential risk, and compared these to the natural and in situ levels. We found that the parameter (i.e., habitat quality and total particulation) homander total suspended solids (TSS) and other abiotic and biotic processes contributed to the abundance of faeces rather than the predicted risk from AE and FA. Moreover, the documented natural de novo synthesis and rapid degradation of FA highlight the need to carefully consider the procedures for environmental risk assessment of naturally occurring compounds such as FA, e.g. in line with the added risk concept known from metal risk assessment.

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**1. Introduction**

Alcohol ethoxylates (AE) are high production volume (HPV) chemicals used widely in “down-the-drain” chemicals globally in detergent and personal care products. Their worldwide surfactant annual use in the U.S. alone was 381,000 metric tons in 2008 (Diaz and Collins, 2009). Commercial AE generally consist of a mixture of several homologs (114) of varying carbon chain length (C<sub>n</sub>) and degree of ethoxylation (EO<sub>x</sub>). Homologs that are not ethoxylated (C<sub>n</sub>H<sub>2n+2</sub>O) are also known as aliphatic alcohols or simply fatty alcohols (FA). AE conform to the general structure:

$$\text{CH}_3(\text{CH}_2)_n(\text{OCH}_2\text{CH}_2)_x\text{OH}$$

where  $n$  is generally 11–15, 17 and  $x$  is 0–18.

A conventional shorthand notation for a material is “C<sub>n</sub>EO<sub>x</sub>”, where  $n$  is the aliphatic chain length and  $x$  is the degree of ethoxylation. FA are the special case to the formula where  $x = 0$  (C<sub>n</sub>H<sub>2n+2</sub>O). In most consumer product applications, the saturated aliphatic group is essentially linear with a very small amount of branching. FA represent a special concern in the context of environmental risk, as these are also abundant and ubiquitous naturally occurring compounds (e.g. animal fats and in human feces; Kraljic et al., 2012). Since these are biogenic compounds, they inherently have the potential to partition into fats. Kraljic et al. (2012) recently published that long chain alcohols can be sourced from both natural and anthropogenic sources. Therefore,

ACI scientists collaborate and publish research in peer-reviewed journals to detail the safety of cleaning product ingredients.

“Pharmaceuticals and Personal Care Products in the Environment: What Are the Big Questions?” (*Environmental Health Perspectives*) found that “a large body of information is now available on effects and risks of pharmaceuticals and personal care products in the environment. This exercise prioritized the most critical questions to aid in development of future research programs on the topic.”

“Collection and Dissemination of Exposure Data throughout the Chemical Value Chain – A Case Study from a Global Consumer Product Industry” (*Human and Ecological Risk Assessment: An International Journal*) detailed the steps taken by cleaning and personal care product manufacturers to develop and summarize the science

around exposure to their products. This enables them to better characterize and communicate the safety of their products.

“The Toxicology and Immunology of Detergent Enzymes” (*Journal of Immunotoxicology*) presented a detailed review of enzyme toxicology and an assessment of the testing methods currently used to support the hazard characterization, risk assessment, and management of detergent enzymes.



Another paper published in the same journal – “Relevance of sensitization to occupational allergy and asthma in the detergent industry” – expanded the industry’s knowledge and understanding of how exposure to detergent enzymes can be related to allergic symptoms. It also reviewed the industry practices that have successfully minimized the

health risks to both occupational workers and consumers from exposure to detergent enzymes.

“An expert panel report of a proposed scientific model demonstrating the effectiveness of antibacterial handwash products” (*American Journal of Infection Control*) presented a realistic protocol for testing the efficacy of consumer antibacterial handwash products in terms of their ability to reduce infection.

“Occurrence and Risk Screening of Alcohol Ethoxylate Surfactants in Three U.S. River Sediments Associated with Wastewater Treatment Plants” (*Science of the Total Environment*) tied a bow on field work conducted in 2003. The research highlighted the low predicted risk of alcohol ethoxylates and fatty acids associated with detergent use through a weight-of-evidence risk assessment. ● ○ ○

“These efforts help ACI continually **improve** the practices and information used...to **ensure** the safety of products...”

# ACI Sustainability Metrics Program




## Environmental Metrics

Supporting companies taking steps toward operating sustainably is a key priority for the American Cleaning Institute (ACI) and tracking industry performance is essential to this goal. ACI's Sustainability Metrics Program is an initiative to develop and publicly report data that provides business value for our members and drives sustainability performance improvements within the industry, including companies that make and sell cleaning products and the companies that provide chemical ingredients. The results are used to gain insights into the environmental footprint of the cleaning products industry and allow companies to internally benchmark against aggregated industry metrics.

The benefits for ACI members who participate in this program are numerous, especially to those who are just starting their sustainability journey. The program creates a framework for companies to initiate and develop a sustainability program around four common environmental metrics: Energy Use; Climate (Greenhouse Gas Emissions); Water Use; and Solid Waste Generation. Participation also opens up pathways to developing expertise within a company to capture data essential to dealing with future regulatory and market-driven demands.





ACI has a strong support system in place to guide members through the reporting process. Annual training is provided for member company staff responsible for collecting and submitting environmental metrics data. ACI also conducts webinars to help companies stay at the forefront of developments on sustainability measurement and benchmarking. In 2012, we offered member companies a new “Sustainability Metrics 101” course which introduced participants to best practices for collecting production facility metrics and provided real world examples from company case studies.

Another important aspect of ACI’s Sustainability Metrics Program is the reporting of aggregated industry metrics data, which can be used as an internal benchmark against which companies can compare their own environmental footprints. Not only does this drive the industry toward a common set of sustainability goals, but it also provides a platform for a company to continually improve their sustainability performance.





## Program Specifics

ACI began aggregating data in 2009 with the assistance of Environmental Resources Management (ERM) and reported publicly in our first [Sustainability Report](#) in 2011. Members are invited to report annually on sustainability metrics in accordance with a protocol closely aligned with the performance indicators of the Global Reporting Initiative (GRI) and the Greenhouse Gas Protocol. Data is aggregated and normalized per metric ton of production in order to better understand how the cleaning products industry is progressing.

Included in our reporting boundary are operations associated with cleaning product-related activities in the United States for which member companies exert operational control. Member companies are responsible for determining their operational control boundaries in accordance with GRI's boundary protocol. The data presented in this report includes impacts from manufacturing facilities, research and development facilities, and office buildings located within the United States.

The data reported in the following sections was collected in 2012. Metrics data was received from 24 ACI member companies, representing 83% of ACI's membership dues base<sup>1</sup>. To ensure year-to-year comparability, each company was responsible for maintaining a consistent reporting boundary across the three-year time frame: 2009-2011. Only companies whose data spanned all three reporting years (2009, 2010 and 2011) are included in the analysis presented in this report.

### Definitions

**Cleaning product production** includes the production of formulated products (laundry and fabric care products, topical cleansers, surface cleaners, dishwashing and associated products), packaging, ingredients, and other chemicals used in the production of cleaning products.

One of the main goals of sustainability measurement and reporting is to encourage tracking of environmental performance within our member companies. In order to increase participation and facilitate progress, ACI encourages companies to participate even if they cannot provide data for every metric or every reporting year. Though not included in the results reported here, these companies have gained experience on metric reporting that will support submission of data in future years of the metrics program.

### Definitions

**Operational control** was broadly defined as those facilities and impacts over which the member company exerts day-to-day control or significant influence, particularly with respect to environmental sustainability metrics.



### The following are member companies that participated in 2012:

AkzoNobel Surface Chemistry	FMC Corporation
Amway	Givaudan Fragrances Corporation
Arylescence, Inc.	Henkel Consumer Goods, Inc.
BASF Corporation	Huntsman Corporation
Church & Dwight Company, Inc.	Novozymes
The Clorox Company	The Procter & Gamble Company
Colgate-Palmolive Company	PQ Corporation
Croda Inc.	Sasol
The Dow Chemical Company	SC Johnson
DuPont Industrial Biosciences	Seventh Generation
Ecolab Inc.	Shell Chemical LP
Evonik Goldschmidt Corporation	Stepan Company

## Comparability

Due to the varying levels of reporting experience of each of our participating member companies and differences between their units of business, interpretations about the data should be made with care. Caution should especially be taken when comparisons are made with ACI's prior [Sustainability Report](#). Data in the prior report were collected in 2010, which was during the early stages of ACI's program, and represented fewer member companies. For example, in the 2011 public report, results captured metrics associated with 11.3 million metric tons per year of cleaning product production. Our current data captures metrics related to 15 million metric tons per year, an increase of 33 percent. ●



# Metrics for 2012

Following are the results of ACI's 2012 Sustainability Metrics Program which include four basic aspects of member operations that are within their day-to-day control or influence:

[Energy Use](#)

[Climate \(Greenhouse Gas Emissions\)](#)

[Water Use](#)

[Solid Waste Generation](#)





## Energy Use



Energy use data was received from 20 ACI member companies for aggregation. Over the three-year period, energy efficiency (i.e., energy use per metric ton (mt) of production) of cleaning product production has remained relatively stable, with a slightly decreasing trend per metric ton produced. Compared to 2009, energy efficiency has shown an overall improvement of 9 percent. The overall improvement is due to a 6 percent reduction in energy use per metric ton produced from 2009 to 2010 and a 4 percent decrease from 2010 to 2011. The average aggregated energy footprint, expressed as the total energy used across the three-year period divided by the total production, was 5 Gigajoules\* per metric ton of cleaning product produced.

The decreasing use of energy in production illustrates that progress is being made across the industry toward improving energy efficiency. While it is too early to report a significant downward energy use trend, the advancements made during this period are encouraging for the future.

Energy is a fundamental requirement of the production process for ingredients, packaging, and final product manufacturing. Efficient use of Earth's natural energy resources is the key to more sustainable products.

The energy metric tracks the amount of energy used for ACI-related production activities, including energy consumed directly by a site or indirectly as a result of the purchase of intermediate energy, such as electricity.



## Gigajoules per metric ton of cleaning product (GJ/mt)

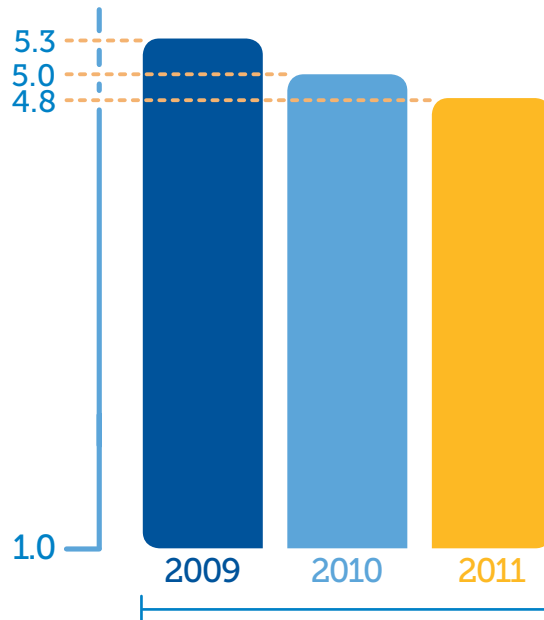
*Direct energy sources include:*

- Coal
- Gasoline
- Natural Gas
- Propane
- Kerosene
- Fuel oil

*Energy consumed indirectly includes:*

- Electricity
- Purchased steam
- Other "green" energy sources (e.g., solar, wind)

\*The Gigajoule is a unit of measure for energy equal to approximately 278 kilowatt hours.



**-9%**

**Percentage change overall (2009-2011)**

**Average Aggregate Footprint**

**5.0 GJ/mt**



## Climate (Greenhouse Gas Emissions)



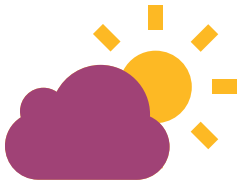
Greenhouse Gas (GHG) Emissions data was received or calculated from energy sources for 19 companies. Over the three-year period, aggregate greenhouse gas emissions per metric ton of production have shown slight variations year-to-year. From 2009 to 2011, a 7 percent decrease in GHG emissions occurred. In 2010, an increase of 6 percent occurred compared to 2009, which was followed by a decrease of 12 percent from 2010 to 2011. The average aggregated GHG footprint, expressed as the total emissions across the three-year period divided by the total production, was 314 kilograms CO<sub>2</sub> equivalents per metric ton of cleaning product production.

The direct cause of the increased GHG emissions in 2010 is unclear. It is important to remember the results are an aggregate of many companies, each with their own changing energy profile. It is possible facilities switching energy sources may be a cause of the variations as each source has a distinct emissions profile.

Tracking and reducing emissions released into the air during manufacturing is a vital practice in decreasing negative climate change impacts of ACI-related products.

Member companies report GHG emissions from sources under their operational control and from indirect emissions that are the consequence of activities of the reporting organization, but are generated at sources owned or controlled by another organization.



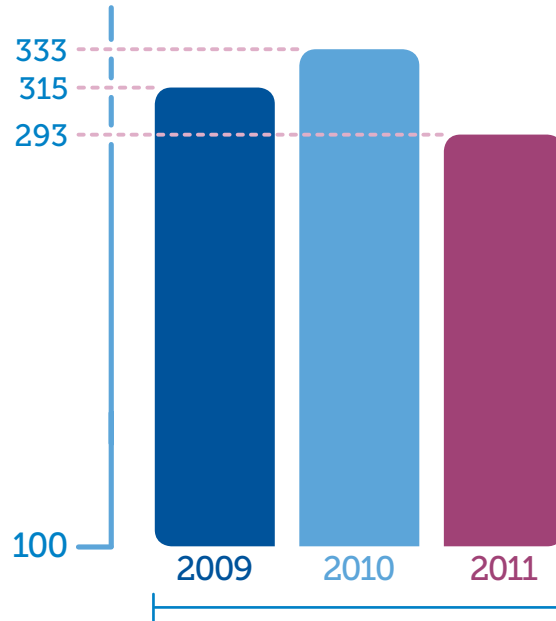


## Kilograms CO<sub>2</sub> equivalents per metric ton of cleaning product production (kg/mt)

Direct emissions of greenhouse gases from sources within the company's reporting boundary include:

- Fugitive emissions
- Venting
- Physical or chemical processing
- Other combustion processes
- Generation of electricity, heat, or steam

Indirect emissions of greenhouse gases resulting from the generation of purchased electricity, heat, or steam.



**-7%**

Percentage change overall (2009-2011)

Average  
Aggregate Footprint  
**314 kg CO<sub>2</sub> eq./mt**

## Water Use



The water use data collected was received from 20 member companies. Over the three-year period, water used to produce cleaning products and their ingredients has remained relatively stable, with only slight fluctuations. In 2010, water use decreased 11 percent per metric ton of production compared to 2009. Data in 2011 showed a 6 percent increase in water use compared to 2010. The average aggregated water use footprint, expressed as the total water used across the three-year period divided by the total production, was 3.6 cubic meters of water per metric ton of cleaning product production.

The results indicate that the amount of water used in cleaning product production is relatively stable within the industry. While every company's situation varies, large reductions in water use across the industry were not seen during this three-year period. Barriers to improving water efficiency need to be further explored.

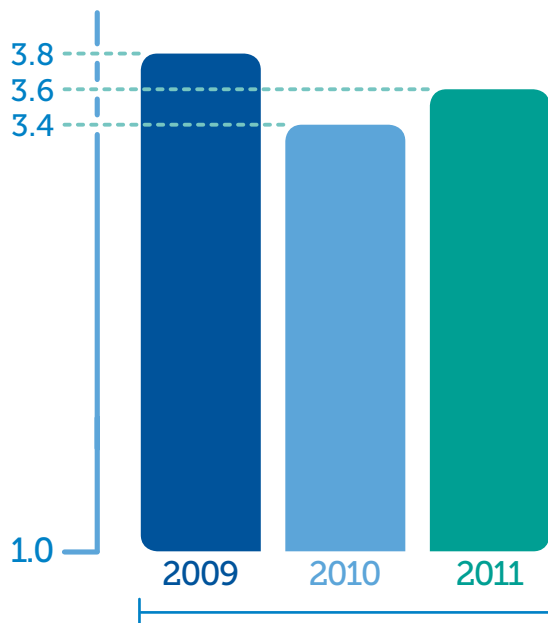
Water scarcity is an issue of worldwide concern. As a necessary resource for the full life-cycle of ACI-related products, the water metric tracks the water volume used (i.e., withdrawn from the environment) by each company and the water volume saved through conservation measures throughout the production process.



## Cubic meters of water per metric ton of cleaning product production (m<sup>3</sup>/mt)

The water use metric includes:

- Municipal water
- Water withdrawn from wells
- Surface water
- Collected rain water
- Water brought on site for non-potable uses



-5%

Percentage change overall  
(2009-2011)

Average  
Aggregate Footprint

**3.6 m<sup>3</sup>/mt**

## Solid Waste Generation



Data from 19 companies was included in the solid waste metric. Over the three-year period, solid waste generation per metric ton production has seen an overall reduction of 17 percent. A significant reduction of 24 percent was reported for 2010 compared to 2009, which was followed by a 10 percent increase in 2011. The average aggregate solid waste footprint, expressed as the total waste generated across the three-year period divided by the total production, was 35 kilograms solid waste per metric ton of cleaning product production.

While overall from 2009 to 2011 solid waste generation decreased, the metric is unstable from year-to-year. The fluctuating data indicates that progress is being made around reducing waste in the production phase. Many member companies are in the process of pursuing zero waste goals or other improvements. As the efficiency of the product-to-waste relationship continues to mature, overall reductions in the average industry footprint are expected.

Moderating solid waste generation is a critical and continual challenge. Successful waste-reduction measures help improve efficiency and alleviate pressure on natural resources.

The solid waste metric tracks the amount of solid waste generated, reused, recycled, and disposed of by each company as a result of cleaning product production. Solid wastes generated within the company's operational control are included, whether regulated as nonhazardous or hazardous.

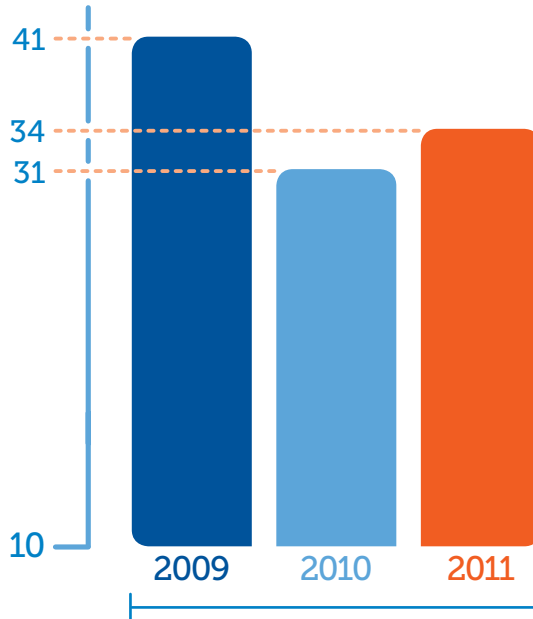


## Kilograms solid waste per metric ton of production (kg/mt)

For example:

- Waste disposed or treated on-site
- Waste reused off-site
- Waste recycled off-site
- Waste landfilled off-site
- Waste otherwise disposed of off-site (e.g., incineration)

Post-consumer waste is not included.



-17%

Percentage change overall (2009-2011)

Average Aggregate Footprint

**35 kg/mt**

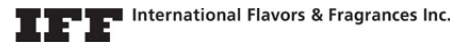


## Stories of Sustainability



ACI member companies are committed to increasing sustainability and demonstrating corporate social responsibility. We invite you to learn more about their individual efforts in our online showcase, available here: [www.cleaninginstitute.org/sustainability2013](http://www.cleaninginstitute.org/sustainability2013)

The following ACI member companies have shared their stories:



[www.cleaninginstitute.org](http://www.cleaninginstitute.org)



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