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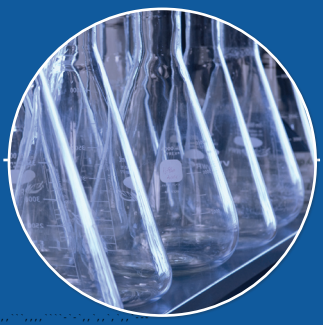
NSF/AWWA/ANSI 416 - 2017

Sustainability Assessment for Water Treatment Chemical Products



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for Sustainability –

Sustainability assessment for water treatment chemical products

Standard Developer

NSF International

Partnership collaboration with American Water Works Association

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Contents

1 General 1
1.1 Purpose 1
1.2 Scope 1
1.3 Principles 2

2 Normative references 2

3 Definitions 4

4 Conformance, evaluation, and assessment criteria 6
4.1 Elements 6
4.2 Procedures for labeling and reporting 6
4.3 Prerequisite – Boundary diagram 8
4.4 Prerequisite – Drinking water chemicals 8

5 Chemical product design 8
5.1 Purpose 8
5.2 Prerequisite – Environmental consideration in chemical product design 9
5.3 Life cycle considerations 9
5.4 Informed selection of major suppliers 10

6 Chemical product manufacturing process 11
6.1 Purpose 11
6.2 Environmental policy and management 11
6.3 Conservation of energy resources 11
6.4 Management of water resources 12
6.5 Optimization of material resources 13
6.6 Protection of air resources 14
6.7 Global sustainability of water resources 15

7 Chemical product efficacy 15
7.1 Prerequisite – Chemical content 15
7.2 Chemical efficacy 15

8 End-of-life management 17
8.1 Water treatment chemical product repurpose, reuse, or reprocess (maximum of 2 points) 17
8.2 Collection of packaging 17

9 Corporate governance 17
9.1 Purpose 17
9.2 Public commitment to sustainability 17
9.3 Employer responsibility 18
9.4 Community engagement 19
9.5 Financial leadership 20

Annex A 23

Annex B Key elements of a certification program for sustainability assessment for water treatment chemical product manufacturers, distributors, repackagers, and relabelers 35

Annex C Prevention of Discrimination – Examples 39

Annex D AWWA Chemical Standards 41

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Annex E Table E.1 - Common elements of Environmental Management Systems 43

Annex F 45

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Foreword[2]

This American National Standard, NSF/AWWA/ANSI 416 Sustainability Assessment for water treatment chemicals has been created to address sustainability of the manufacturing, distribution, repackaging, relabeling and end of life for a water treatment chemical. The Standard provides requirements sustainability for environmental, human health and social responsibility criteria. This Standard was developed as a collaborative partnership with the American Water Works Association and NSF International.

NSF Sustainability draws upon this expertise in standards development, product assurance and certification, advisory services and management systems to help companies green their products, systems and supply chains. NSF, through the National Center for Sustainability Standards, has developed sustainability standards for green chemicals, building products and materials and drinking water quality. NSF works with leading regulators, scientists, engineers, public health and environmental health professionals and industry representatives to develop these transparent, consensus-based standards.

This edition of the Standard includes the following revision:

Issue 4
A reference to NSF/ANSI 50 was corrected to read NSF/ANSI 60 in Section 7.2.

Suggestions for improvement of this Standard are welcome. This Standard is maintained on a Continuous Maintenance schedule and can be opened for comment at any time. Comments should be sent to Chair, Joint Committee on Water Sustainability - Chemicals, NSF International, National Center for Sustainability Standards at ncss@nsf.org, or P.O. Box 130140, Ann Arbor, Michigan 48133-0140, USA.

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Established in 1881, the American Water Works Association is the largest nonprofit, scientific, and educational association dedicated to managing and treating water, the world's most important resource. With approximately 50,000 members, AWWA provides solutions to improve public health, protect the environment, strengthen the economy and enhance our quality of life.

NSF International

NSF International has been testing and certifying products for safety, health and the environment for more than 65 years (www.nsf.org). As an independent organization, NSF's mission is to protect public health and the environment through standards development, inspection, management systems auditing, testing and certification for industries including food, water, building materials, retail, chemicals, automotive, aerospace, consumer products and health sciences. Operating in more than 120 countries, NSF is committed to protecting public health worldwide.

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NSF/AWWA/ANSI Sustainability Standard

Sustainability assessment for water treatment chemical products

1 General

1.1 Purpose

The purpose of this Standard is to provide a framework for collecting data and communicating information on the sustainable attributes of a water treatment chemical product, whether repackaged, relabeled and/or distributed and can be from one or more facilities (locations). Such information is expected to encourage the demand for and supply of water treatment chemical processes that have a reduced impact on the environment and society, thereby stimulating the potential for market-driven continuous improvement.

This Standard is intended to be science based, provide transparency, and offer credibility for manufacturers in making environmental claims and to harmonize the principles and procedures used to support such claims.

Sustainability-related information can contribute to a manufacturer's decisions about supply chain modifications, product(s) content charges, manufacturing adjustments, performance improvements, end-of-life options, and corporate governance, with the goal of more sustainable chemical products.

Within the same facility, the chemical product may be manufactured, relabeled, repackaged. Each step has the opportunity to claim credit (see section 4) toward conformance.

This Standard is intended to be used primarily by water treatment chemical product manufacturers interested in understanding and improving the sustainability of their chemical products and manufacturing processes as well as distributors, repackagers, and relabelers. Independent auditors, certification bodies and environmental labeling organizations are also potential users in support of market-based sustainability claims. This Standard may also be used by purchasers and consumers who wish to ensure that manufacturers are accurately declaring the sustainable nature of the manufacture of their chemical products.

1.2 Scope

This Standard establishes a consistent approach to the evaluation and determination of environmentally preferable and sustainable chemical product manufacturing processes, water treatment chemical products, distributors, repackagers, and relabelers of chemical products. Many of these water treatment chemical products are used for public health protection. The document includes relevant criteria across the product(s) life cycle from raw material extraction through manufacturing, use, and end-of-life management. The intended use of this Standard is to show that the product, manufacturing processes, distribution, repackaging/relabeling, and corporate practices of a water treatment chemical product manufacturer are more sustainable.

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1.3 Principles

This standard was developed based on the following important principles.

1.3.1 Life cycle consideration

The life cycle of a product(s) and its associated process(es) ranges from activities associated with the generation of natural resources for production and delivery of raw materials to the final disposal of the product at the end of its useful life. This Standard was developed to consider the impacts of the water treatment chemical product and its manufacturing processes as well as distribution, repackaging and relabeling at the different life cycle stages to identify the appropriate and relevant characteristics and criteria to be used in evaluating a water treatment chemical product and its process sustainability profile.

1.3.2 Prerequisite – Relationship with legislation

A precondition for claiming conformance with this Standard shall be that the manufacturer documents the company is in compliance or taking steps toward resolution of any violations to applicable environmental local, state (or provincial), and federal regulations. This shall be confirmed by the CEO or other senior leadership in a statement confirming as such.

1.3.3 International trade aspects

The procedures and requirements included within this Standard have been prepared, adopted, and applied with a view to avoiding unnecessary obstacles to international trade.

1.3.4 Scientific basis

The criteria contained in this Standard were developed and selected based on social, economic, sound scientific and engineering principles intended to produce accurate, reproducible results.

2 Normative references

The following documents contain provisions that, through reference, constitute provisions of this NSF/ANSI Standard. At the time this Standard was balloted, the editions listed below were valid. All documents are subject to revision, and parties are encouraged to investigate the possibility of applying the recent editions of the documents indicated below. The most recent published edition of the document shall be used for undated references.

Age Discrimination in Employment Act of 1967[3]

Civil Rights Act of 1991[3]

CML, Leiden University Institute of Environmental Sciences, *Chain Management by Life Cycle Assessment (CMLCA)*[4]

Equal Pay Act of 19633

Global Reporting Initiative (GRI)[5]

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[3] EEOC Headquarters, U.S. Equal Opportunity Commission, 131 M Street, NE, Washington, DC 20507 <www.eeoc.gov>

[4] Leiden University Institute of Environmental Sciences (CML), P.O. Box 9518, 2300 RA Leiden, The Netherlands <www.leidenuniv.nl/interfac/cml/ssp/index.html>

[5] Global Reporting Initiative, PO Box 10039, 1001 EA, Amsterdam, The Netherlands. <www.globalreporting.org>

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ILO C29 Forced Labour Convention, 1930[6]

ILO C105 *Abolition of Forced Labour Convention,* 1957[6]

ILO C182 *Worst Forms of Child Labour Convention,* 1999[6]

International Organization for Standardization (ISO) 9001: 2000, Quality management systems – Requirements[7]

International Organization for Standardization (ISO) 14025: 2006, Environmental labels and declaration – type III environmental declarations – principles and procedures[7]

International Organization for Standardization (ISO) 14044: 2006, Environmental management – Life cycle assessment – Requirements and guidelines[7]

ISO 14001, 2004, *Environmental management systems – Requirements with guidance for use*[7]

ISO 14040, 2006, *Environmental management – Life cycle assessment – Principles and framework*[7]

ISO 14064:1, 2006, *Greenhouse gases – Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals*[7]

ISO 14064:2, 2006(E), *Greenhouse gases – Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements*7

ISO 14064:3, 2006, *Greenhouse gases – Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions*[7]

ISO/DIS 26000, Guidance on social responsibility[7]

National Renewable Energy Laboratory, US Life Cycle Inventory Database[8]

National Association of Chemical Distributors Responsible Distribution®[9]

Occupational Health and Safety Administration (OSHA)[10]

Rehabilitation Act of 1973[3]

Responsible Care®[11]

Social Accountability International, SA 8000:2008, *Social Accountability*[12]

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[6] International Labour Office, 4 route des Monillons CH-1211 Geneva, Switzerland <www.ilo.org>

[7] International Organization for Standardization, ISO Central Secretariat, 1, ch De la Voie-Cruese, CP 56, CH-1211 Geneva 20, Switzerland www.iso.org

[8] National Renewable Energy Laboratory, 901 D. Street, S.W. Suite 930, Washington, DC 20024-2157

[9] National Association of Chemical Distributors Responsible Distribution®, <http://www.nacd.com/rd/>

[10] Occupational Health and Safety Administration (OSHA), U.S. Department of Labor
Occupational Safety and Health Administration, 200 Constitution Avenue, Washington, DC 20210 <www.osha.gov>

[11] International Responsible Care Initiative, ICCA c/o Cefic Avenue E. Van Vieuwenhuyse 4, box 1, B-1160 Brussels, Belgium <www.responsiblecare.org/>

[12] Social Accountability International, 15 West 44th Street, 6th Floor, New York, NY 10036 <www.sa-intl.org>

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Titles I and V of the Americans with Disabilities Act of 1990 (ADA)[3]

Title VII of the Civil Rights Act of 19643

United States Environmental Protection Agency (USEPA) *Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI)*[13]

United States Environmental Protection Agency (USEPA) *Toxics Release Inventory (TRI) Program*[14]

United Nations, *Globally Harmonized System for Classification and Labeling of Chemicals (GHS),* Third Revised Edition, 2009[15]

3 Definitions

The following are definitions of terms used in this document:

3.1 chemical product: The primary chemical substance that is intentionally formed for commercial use and is the result of a chemical transformation reaction or mixture. Chemical products are described by one or more chemical identification numbers (e.g., Chemical Abstract Service Registry Numbers or comparable registry numbers).

3.2 chemical product manufacturing process: A term broadly used to include the operations, equipment, and technology needed for chemical manufacture, including reactors, distillation tanks, piping, boilers, cooling towers, refrigeration systems, etc. Any resources and emissions from operations used to treat waste are outside the scope/boundary of the chemical manufacturing process (such as incineration, wastewater treatment, vent treatment, etc.).

3.3 distributor: An entity that receives bulk chemicals or ready for sale chemicals in packages from the manufacturer and passes them on to a customer who does not relabel, repackage, alter, or adulterate the chemical product in any way.

3.4 drinking water treatment chemical: a chemical, including any associated contaminants and impurities that is directly added to water for the purpose of converting raw water supplies into potable drinking water.

3.5 global sustainability of water resources: For purposes of this Standard, this term refers to the ability of water treatment to provide safe water for human contact, environmental release and consumption.

3.6 hazardous waste: A liquid, solid, contained gas, or sludge wastes that contain properties that are dangerous or potentially harmful to human health or the environment.

3.7 independent third party: External to the organization, typically certification organizations that are unaffected by the outcome of the review or audit.

3.8 life cycle assessment (LCA): A systematic evaluation of the environmental impact of a product(s) or

[13] U.S. Environmental Protection Agency, PA Office of Research and Development National Risk Management Research Laboratory (TRACI), Sustainable Technology Division – Systems Analysis Branch (MS-466), 26 West Martin Luther King Drive, Cincinnati, OH 45268 <www.epa.gov/nrmrl/std/traci/traci.html>

[14] U.S. Environmental Protection Agency, National Center for Environmental Assessment, Office of Research and Development, Washington, DC 20460 <www.epa.gov/trinter/lawsandregs/pbt/pbtrule.html>

[15] United Nations, 1st Ave. & E 44th St. New York, NY 10017 <www.unece.org/>

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product system that may include all stages of its life cycle.

3.9 life cycle impact assessment (LCIA): A phase of life-cycle assessment aimed at understanding and evaluating the magnitude and significance of the potential environmental impact categories.

3.10 life cycle inventory (LCI) analysis: A phase of life-cycle assessment involving compilation and quantification of inputs and outputs for a given product(s) system that may include all stages of its life cycle.

3.11 local employment: Employment of workers who reside within 15 mi of the primary place of employment or can access the primary place of employment within 30 min using vehicular transport.

3.12 major suppliers: Those companies that provide ingredients to a chemical product manufacturing process consisting of 25% or greater of the total process inputs including ingredients, reactants and processing aids.

3.13 manufacturer: Entity that creates products by transforming organic and/or inorganic raw materials with chemical or non-chemical processes into different chemical products.

3.14 metropolitan statistical area: A geographical region with a relatively high population density at its core and close economic ties throughout the area.

3.15 non-hazardous waste (solid waste): Garbage or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities.

3.16 operational control: Any facility that the reporting organization/company has control over or an operation, if it has the full authority to introduce and implement its operating policies at the other facility.

3.17 publicly disclosed (or public disclosure): Documentation displayed on a website, in a company report, available upon request, or other means that public access is not restricted.

3.18 recreational water: Water that is intended for human body contact such as pools, spas, hot tubs, splash zones, and other types of water facilities (excluding natural bodies of water).

3.19 relabeler: An entity that purchases chemical products from the manufacturer who then places their own labeling on the product. The chemical product remains in its original packaging from the manufacturer. The chemical product is not adulterated or altered in any way.

3.20 repackager: An entity that purchases chemical products from the manufacturer who then places their own labeling on the product and places the chemical product in different containers or shipping material for sale. The chemical product itself is not adulterated or altered in any way.

3.21 supplier for repackagers/relabelers: An entity supplying labeling, glues, packaging, paper, or other material to aid in repackaging or relabeling on a chemical product.

3.22 top supplier (repackager/relabeler): Organization that provides materials toward packaging, and/or relabeling of the chemical product at the highest percentage by weight (see table below).

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Type	Top supplier calculation
Repackagers	Largest supplier of materials contributing to the repackaging calculated by weight compared to the total weight of the packaging including the product.
Relabelers	Largest supplier of materials contributing to the ingredients for labeling and packaging calculated by weight of the packaging including the product.

3.23 wastewater: A combination of the liquid and water-carried waste from residences, commercial buildings, industrial plants, and institutions, together with any groundwater, surface water, and storm water that may be present.

4 Conformance, evaluation, and assessment criteria

4.1 Elements

The criteria are grouped in general alignment with a product's life cycle, from design (including raw material selection, transport and production) to manufacturing, use, and disposal. Additionally, criteria related to corporate governance are included to address issues of social responsibility.

The sustainability assessment criteria in this Standard are divided into five basic categories for chemical products consisting of elements that are potentially available to chemical manufacturing organizations, distributors, repackagers, and relabelers seeking compliance with this Standard. The five categories are:

— chemical product design;
— chemical product manufacturing process;
— chemical product efficacy;
— end-of-life; and
— corporate governance.

4.2 Procedures for labeling and reporting

4.2.1 Basic principle

The methodology for assessing whether a chemical product and its manufacturing processes as well as the distribution, repackager and/or relabeler conform to the environmental, economic, and social responsibility criteria and for verifying ongoing conformance shall be documented and be of sufficient detail to provide consumer confidence that this Standard has been correctly applied.

4.2.2 Conformance – water treatment chemical product distributor

Achievement of conformance shall be reached when the distributor for a certified (conformant) water treatment chemical product has met applicable prerequisites and obtains a minimum of 30% of the total points (38 points available) available from optional criteria. This shall permit the distributor to make the product(s) declaration "Water Treatment Chemical Product Sustainability Conformance – Distributor".

4.2.3 Conformance – water treatment chemical product relabeler

Achievement of conformance shall be reached when the relabeler for a certified (conformant) water treatment chemical product has met applicable prerequisites and obtains a minimum of 30% of the total points available (43 points available) from the optional criteria. This shall permit the chemical relabeler to make the product(s) declaration "Water Treatment Chemical Product Sustainability Conformance – Relabeler".

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4.2.4 Conformance – water treatment chemical product repackager

Achievement of conformance shall be reached when the repackager for a certified (conformant) water treatment chemical product has met applicable prerequisites and obtains a minimum of 30% of the total points available (43 points available) from the optional criteria. This shall permit the chemical repackager to make the product(s) declaration “Water Treatment Chemical Product Sustainability Conformance – Repackager”.

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4.2.5 Conformance – water treatment chemical product manufacturer

Achievement of conformance shall be reached when the chemical product manufacturer meets all prerequisites and obtains a minimum of 30% of the total points (57 points available) available from optional criteria. This shall permit the chemical product manufacturer to make the product(s) declaration "Water Treatment Chemical Product Sustainability Conformance – Manufacturer".

4.2.6 Prerequisite – monitoring and reevaluation

The manufacturer, distributor, repackager, and relabeler shall maintain documented procedures that demonstrate measurement and monitoring of continued conformance to this Standard (also see B.2.4).

4.2.7 Certification

Information on suggested parameters for third-party certification is provided in Annex B.

4.3 Prerequisite – Boundary diagram

4.3.1 Water treatment chemical product manufacturer

For the water treatment chemical product under assessment, a boundary diagram (see Annex F for example diagram) shall be submitted showing all aspects that are included in this assessment. The boundary shall be applicable to all the criteria in this Standard, unless otherwise specified in a specific criterion. Corporate criteria cover the entire organization whereas facility or product specific criteria cover the water treatment chemical product or its manufacturing process undergoing assessment to this Standard. This boundary shall include all facilities that manufacture the finished chemical product (e.g., subcontracting manufacture).

4.3.2 Water treatment chemical product distributor, repackager, and relabeler

For the distributor, repackager, and relabeler a boundary diagram shall also be provided. This boundary diagram (see Annex F for example diagram), shall be submitted showing all aspects that are included in the assessment of distribution, repackaging, and relabeling for the water treatment chemical product. The boundary shall be applicable to all criteria in this standard, unless otherwise specified in a specific criterion. Corporate criteria cover the entire organization whereas facility criteria cover the location where the water treatment chemical product is being distributed, repackaged, or relabeled.

4.4 Prerequisite – Drinking water chemicals

For drinking water chemicals, they shall be independent third party certified to NSF/ANSI 60.

5 Chemical product design

In order to achieve a sustainable water treatment chemical product rating, the process shall improve its environmental, economic, and social aspects while protecting and enhancing the needs of future generations, public health and welfare, and the environment over its full commercial cycle, from raw materials extraction to final disposition. A sustainable water treatment chemical product shall not compromise performance and quality equivalent to those of similar water treatment chemicals in order to become more sustainable. A certified and non-certified water treatment chemical product and its associated process shall not have the same trade name or trademark designation.

5.1 Purpose

The criteria in this section are intended to encourage the understanding of environmental impacts of a

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