NSF 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 changes, 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, and 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.

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 1967¹

Civil Rights Act of 1991

CML, Leiden University Institute of Environmental Sciences, Chain Management by Life Cycle Assessment (CMLCA)²

Equal Pay Act of 19631

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² Leiden University Institute of Environmental Sciences (CML), P. O. Box 9518 2300 RA Leiden, The Netherlands <www.leidenuniv.nl/interfac/cml/ssp/index.html>
Global Reporting Initiative (GRI)\(^3\)

ILO C29 Forced Labour Convention, 1930\(^4\)

ILO C105 *Abolition of Forced Labour Convention*, 19573

ILO C182 *Worst Forms of Child Labour Convention*, 19993

International Organization for Standardization (ISO) 9001: 2000, Quality management systems – Requirements\(^5\)

International Organization for Standardization (ISO) 14025: 2006, Environmental labels and declarations – type III environmental declarations – principles and procedures\(^5\)


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*\(^5\)


ISO/DIS 26000, Guidance on social responsibility\(^5\)

National Renewable Energy Laboratory, US Life Cycle Inventory Database\(^6\)

National Association of Chemical Distributors Responsible Distribution\(^7\)

Occupational Health and Safety Administration (OSHA)\(^8\)

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\(^3\) Global Reporting Initiative, PO Box 10039, 1001 EA, Amsterdam, The Netherlands. <www.globalreporting.org>.

\(^4\) International Labour Office, 4 route des Morillons CH-1211 Geneva 22, Switzerland <www.ilo.org>

\(^5\) International Organization for Standardization, ISO Central Secretariat, 1, ch. De la Voie-Cruese, CP 56, CH-1211 Geneva 20, Switzerland <www.iso.org>


\(^7\) National Association of Chemical Distributors Responsible Distribution®, <http://www.nacd.com/rd/>

\(^8\) Occupational Health and Safety Administration (OSHA), U.S. Department of Labor Occupational Safety & Health Administration, 200 Constitution Avenue, Washington, D.C. 20210 <www.osha.gov>
Rehabilitation Act of 19731

Responsible Care®9

Social Accountability International, SA8000:2008, Social Accountability10

Titles I and V of the Americans with Disabilities Act of 1990 (ADA)1

Title VII of the Civil Rights Act of 19641

United States Environmental Protection Agency (USEPA) Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI)11

United States Environmental Protection Agency (USEPA) Toxics Release Inventory (TRI) Program12


3 Definitions

3.x 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.x 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.x distributor: An entity that collects bulk chemical or ready for sale chemical from the manufacture and does not repackage, alter, or adulterate the chemical product in any way.

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


11 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>


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

3.x life cycle assessment (LCA): A systematic evaluation of the environmental impact of a product(s) or product system that may include all stages of its life cycle.

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

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

3.x 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.x 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.x 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.x 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.x 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.x 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 itself is not adulterated or altered in any way.

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

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

<table>
<thead>
<tr>
<th>Type</th>
<th>Top supplier calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distributors</td>
<td>Largest supplier of materials contributing to the distribution and packaging calculated by weight compared to total weight of packaging including product.</td>
</tr>
<tr>
<td>Repackagers</td>
<td>Largest supplier of materials contributing to the repackaging calculated by weight compared to the total weight of the packaging including the product.</td>
</tr>
<tr>
<td>Relabelers</td>
<td>Largest supplier of materials contributing to the ingredients for labeling and packaging calculated by weight of the packaging including the product.</td>
</tr>
</tbody>
</table>

3.x 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 the 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 available (38 points available) from the optional criteria. This shall permit the chemical 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”.

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”.

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 (54 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 the 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 trademarked designation.

5.1 Purpose

The criteria in this section are intended to encourage the understanding of environmental impacts of a water treatment chemical product by the product designers and developers. A sustainable water treatment chemical product shall demonstrate multiple attributes that protect public health and environment and foster healthy and prosperous conditions for human and ecological systems.

5.2 Prerequisite - Environmental considerations in chemical product design

The manufacturer shall implement an environmental assessment program within the chemical product design and development system. The program shall consider the environmental attributes and impacts of its chemical product, packaging and delivery including issues such as designing for efficacy, longevity, reusability, recyclability and/or compostability. The environmental assessment program shall consider environmental attributes and impacts of the chemical product, packaging, and delivery across the entire product life cycle (e.g., raw material extraction, transportation, manufacturing, use, and end-of-life).

The program should also consider cost to manufacture, savings from initiatives, value-capture costs, and remediation necessary from other actions.

5.3 Life Cycle Considerations
5.3.1 Life Cycle Inventory (LCI)

The chemical manufacturer, distributor, repackager, and relabeler shall earn 1 point for having a life cycle inventory for the water treatment chemical product under assessment (ISO 14040 series). The boundary of this credit shall be as defined in 4.3.

5.3.2 Life cycle assessment (LCA)

The manufacturer shall earn 2 points if it completes a cradle-to-gate or cradle-to-grave Life Cycle Assessment conforming to ISO 14040/ISO 14044 standards within the past 5 years on the chemical product and its manufacture based on the LCI in 5.3.1. The distributor, repackager, and relabeler shall earn 2 points if it completes a gate to gate Life Cycle Assessment conforming to ISO 14040/ISO 14044 standards within the past 5 years on the water treatment chemical product.

Life cycle impact assessment factors shall be taken from publicly available sources such as TRACI\textsuperscript{11} (USEPA Tools for the Reduction and Assessment of Chemical and other Environmental Impacts) or CMLCA\textsuperscript{2} (Institute of Environmental Sciences, Leiden University).

5.3.3 Life cycle assessment improvement

The manufacturer, distributor, repackager, and relabeler shall earn 2 points for demonstrating an impact reduction of at least 10\% from the baseline in a minimum of two impact categories contained in the US EPA TRACI\textsuperscript{11} model. The baseline established by each manufacturer, distributor, repackager, and relabeler shall be no more than five years prior to the current chemical product certification year.

5.3.4 Contribution to Life Cycle Inventory

The manufacturer, distributor, repackager, and relabeler shall earn 1 point for having confirmation from National Renewable Energy Laboratory that they contributed life cycle data on the chemical product and its manufacturing process, distribution, repackaging, or relabeling to the United States Life Cycle Inventory (US LCI)\textsuperscript{6} database or confirmation from the appropriate agency if contributed to another global free publicly available life cycle inventory database.

5.3.5 Environmental Product Declaration (EPD)

The manufacturer shall earn 1 point for documenting an Environmental Product Declaration (EPD) conducted in accordance with ISO 14025\textsuperscript{5} or similar product declaration following the requirements of an open consultation-based Product Category Rule (PCR). Verification shall be conducted by an independent third party for the chemical product and its manufacturing process under assessment.

The distributor, repackager, and relabeler shall earn 1 point for documenting an Environmental Product Declaration (EPD) conducted in accordance with ISO 14025\textsuperscript{5} or similar product declaration following the requirements of an open consultation-based Product Category Rule (PCR) module (gate-to-gate). Verification shall be conducted by third party for the distributor, repackager, and relabeler of the water treatment chemical product under assessment.

5.4 Informed selection of major suppliers
The intent of the criteria within this section is to ensure that manufacturers are aware of the environmental performance of their supply chains for the chemical product and its manufacturing process.

5.4.1 Prerequisite – Ingredient, reactant, and processing aids

The manufacturer shall provide a list of major suppliers of all ingredients, reactants and processing aids for the manufacture of the chemical product under assessment to this Standard.

5.4.2 Major Supplier environmental disclosure process

5.4.2.1 The manufacturer shall earn 1 point for documenting its major suppliers (see definition in 3) who provide ingredients, reactants and processing aids (as in 5.4.1) meet one or more of the following:

- Responsible Care® 140019
- Responsible Care® Management System
- ISO 140015
- National Association of Chemical Distributors Responsible Distribution®
- Or equivalent type program

5.4.2.2 The repackager, and relabeler shall earn 1 point for documenting their top supplier of any material related to the repackaging or relabeling of the water treatment chemical product meets one or more of the following:

- Responsible Care® 140019
- Responsible Care® Management System
- ISO 140015
- National Association of Chemical Distributors Responsible Distribution®
- Or equivalent type program

5.4.3 Major Supplier audits (maximum of 2 points)

5.4.3.1 The manufacturer may earn up to 2 points for independent third party or manufacturer audits of major suppliers for the chemical product. It shall earn 1 point if its major suppliers were audited in the past five years to verify conformance with environmental (see prerequisites in 6) and social accountability disclosure requirements (see prerequisites in 9).

Reason: this was updated from 5 years to 3 years to align with certification cycles.

The manufacturer shall earn an additional 1 point if it has conducted annual audits of its major suppliers of the chemical product undergoing assessment to this Standard.

5.4.3.2 The repackager, and relabeler shall earn up to 2 points for independent third party or manufacturer audits of the top supplier of any material for the chemical product's repackaging or relabeling. It shall earn 1 point if its top supplier was audited in the past three years to verify conformance with environmental (see prerequisites in 6) and social accountability disclosure requirements (see prerequisites in 9).

The repackager, and relabeler shall earn an additional 1 point if it has conducted annual audits of its top supplier of any material for the chemical product's repackaging or relabeling.
6 Chemical product manufacturing process

6.1 Purpose

The criteria in this section are intended to encourage manufacturers to quantify the environmental impacts from their chemical product manufacturing process within the scope of this Standard, and then act to reduce or remove those impacts.

6.2 Environmental policy and management

The intent of these criteria is to ensure that manufacturers have a basis from which to actualize strategic environmental management within the organization.

6.2.1 Prerequisite - Environmental policy

The manufacturer, distributor, repackager, and relabeler shall document and implement an environmental management policy. The environmental management policy should include a commitment to meeting legal compliance targets and go beyond compliance with a commitment to continual improvement and pollution prevention and include environmental targets, objectives, and metrics in alignment with the definition of an environmental policy set forth in ISO 14001. This policy shall be communicated to all persons working for or on behalf of the organization, and shall be made publicly available. A routine review process by management should also be addressed in the policy.

In the policy, consideration should also be given to future shared costs or savings from the implementation of the policy.

6.2.2 Environmental management system (maximum of 3 points)

The manufacturer, distributor, repackager, and relabeler shall earn a maximum of 3 points for this credit; 1 point each for third party certification to one or more of the following:

a) ISO 14001 Environmental Management Systems
b) Responsible Care®

c) Global Harmonized System (GHS)
d) National Association of Chemical Distributors (NACD) – Responsible Distribution

e) Responsible Care® RC14001 Technical Specification (revised edition)
f) Quality management system (QMS) (ISO 9001)

6.2.3 Third party verification (maximum of 3 points)

A manufacturer, distributor, repackager, and relabeler shall earn a maximum of 3 points for this credit; 1 point each, for documenting and demonstrating they have received independent third party certification for any of the programs listed in 6.2.2.

6.3 Conservation of energy resources
A manufacturer can improve its environmental impact by means of its energy initiatives: both reduction of consumption (i.e., conservation) and selection of source (i.e., renewability). The intent of the criteria in this section is to encourage both approaches in order to reduce the environmental impacts from energy production and consumption, including resource depletion, greenhouse gas emissions, and hazardous air pollutants.

### 6.3.1 Prerequisite - Energy inventory

The manufacturer, distributor, repackager, and relabeler shall complete an annual inventory of energy use of the chemical process manufacturing facility that encompasses their boundary (see 4.3) production of for the chemical product. The inventory shall be categorized by quantity and source of energy, including the type and distance of transportation of the finished chemical product to the next point of sale.

### 6.3.2 Prerequisite - Transportation efficiency

The manufacturer, distributor, repackager, and relabeler shall document and implement a transportation efficiency program (e.g., save fuel, reduce air pollution, and reduce overall emissions). The manufacturing boundary (see 4.3) shall be from the raw materials receipt through delivery to the next “gate”. The distributor, repackager, and relabeler boundary (see 4.3) shall be from receipt of the chemical product up to the next “gate”. The program shall be updated annually and made available to all employees and contractors who are part of the transportation segment of the organization.

### 6.3.3 Prerequisite - Energy management program

The manufacturer, distributor, repackager, and relabeler shall demonstrate an energy management program. The program shall include the manufacturing facility for the water treatment chemical product within the boundary (see 4.3). The program shall implement continuous improvement of the energy systems’ performance used within the boundary. For improvement tracking purposes, energy shall be counted either as energy per ton of product or energy per unit sales and consistently tracked on that scale. The tracking methodology shall not be changed once it has been established.

The strategic steps in the program shall be part of regular training for employees to assist with implementation of the program. This shall be reviewed on annual basis.

### 6.3.4 Optional – Onsite energy generation

The manufacturer, distributor, repackager, and relabeler shall earn 1 point for demonstrating onsite generation of energy for its manufacturing processes within the boundary (4.3). Examples of this are (not limited to): recycling process heat and utilizing co-product gas to generate electricity. Waste recovery for energy shall also count toward this credit.

### 6.3.5 Optional – Energy source

The manufacturer, distributor, repackager, and relabeler shall earn 1 point for demonstrating facilities within the boundary (4.3) use natural gas as its energy source in lieu of coal or oil. Also facilities within the boundary (4.3) that utilize renewable or alternate sources (e.g., hydro, wind, solar, geothermal, etc.) in lieu of coal or oil shall also qualify for this credit. The percentage of use shall be greater than 50% based on the
inventory in 6.3.1 calculated annually. Energy source use from the inventory (6.3.1) may be calculated together to achieve this credit.

6.4 Management of water resources

The intent of the criteria within this section is to encourage the conservation of water resources and protection of water quality within the water treatment chemical manufacturing facility.

6.4.1 Prerequisite - Water use inventory

The manufacturer shall complete an annual inventory of water use within the water treatment chemical product manufacturing process including identification of quantity of water used, quantity consumed (e.g., loss through evaporation), and sources (e.g., municipal potable, direct capture, on-site wells, reclaimed wastewater, process water). The amount of water included in the final product shall be excluded from the inventory.

6.4.2 Prerequisite - Water reduction and reuse program

The manufacturer shall document and implement a program for water reduction and water reuse in the chemical manufacturing process. The program shall be reviewed annually and contain reuse and reduction goals and methodology for achievement of goals.

6.4.3 Water quality discharge (maximum of 4 points)

The manufacturer shall document that wastewater from the water treatment chemical product manufacturing process released either to a publicly owned treatment works (POTW), or directly to the environment, is of a quality equal to or better than the quality of the supplied water according to established standards. A manufacturer shall earn up to 4 points, as detailed below:

- The manufacturer shall earn 4 points if the operational design for the water treatment chemical product manufacturing process produces zero discharge of wastewater or the water is recycled within the water treatment chemical product manufacturing process; or

- The manufacturer shall earn 2 points if the water treatment chemical manufacturing process wastewater requires no treatment prior to discharge to a publicly owned treatment works or receiving water as per a discharge permit requirement.

6.4.4 Wastewater management (maximum of 2 points)

For manufacturers with a U.S. Environmental Protection Agency's Office of Wastewater Management National Pollutant Discharge Elimination System permit (NPDES), the following may be achieved. For those outside the US, provincial, national or local permits may also be the basis to achieve this credit.

If the manufacturers measured water treatment chemical product manufacturing wastewater discharge is of better quality and quantity than its permit values on an annual average basis for all of the analytes, the manufacturer shall earn 2 points. For those companies that do not have water treatment chemical product manufacturing discharge wastewater due to documented recycle or reuse of wastewater, the manufacturer shall earn 2 points.

6.5 Optimization of material resources
Inefficient materials selection, supplier delivery, chemical production processes, and warehousing operations can lead to high levels of waste generation and corresponding losses in production yields. The criteria in this section are intended to encourage the maximization of yield from chemical product(s) raw materials and to minimize the generation of waste materials during chemical production.

6.5.1 Prerequisite - Waste generation

The manufacturer, repackager, and relabeler shall have a documented and operational non-hazardous waste minimization program that includes an annual non-hazardous waste generation rate for the water treatment chemical manufacturing process facility.

The manufacturer, repackager, and relabeler shall have a documented and operational hazardous waste minimization program that includes an annual hazardous waste generation rate for the water treatment chemical manufacturing process facility.

NOTE – Documentation of zero hazardous waste generation meets the intent of this prerequisite.

Example calculation:

\[
\text{Waste weight / production weight} \times 100 = \text{Waste generation rate (\%)}
\]

6.5.2 Prerequisite - Safe handling of water treatment chemicals in post-manufacturing

The manufacturer, distributor, repackager, and relabeler shall develop and maintain a program for safe handling of water treatment chemicals in all post-manufacturing (i.e., transportation, storage, and use). This shall apply to the water treatment chemical undergoing assessment to this Standard.

6.5.3 Manufacturing non-hazardous waste minimization (maximum of 2 points)

The manufacturer shall earn:

a) 1 point for demonstrating a non-hazardous waste generation rate reduction of at least 10% over the previous three years; or

b) 2 points for demonstrating an annual average total non-hazardous waste generation rate over the previous three years of less than 2% on a weight basis.

Example calculation for b) only:

\[
\text{Non-hazardous waste weight / Production weight} \times 100 = \text{Waste generation rate (\%)}
\]

Complete this calculation for each of the three years, and then average the percentages together.

6.5.4 Manufacturing hazardous waste minimization (maximum of 2 points)

The manufacturer shall earn:

a) 1 point for demonstrating a hazardous waste generation rate reduction of at least 10% over the previous three years; or
b) 2 points for demonstrating an annual average total hazardous waste generation rate over the previous three years of less than 2% on a weight basis.

Example calculation for b) only:

Hazardous waste weight / Production weight x 100 = Waste generation rate (%)

Complete this calculation for each of the three years, and then average the percentages together.

6.5.5 Recycling and reuse of materials

The manufacturer, distributor, repackager, and relabeler shall earn 1 point for developing and maintaining a program for recycle and reuse of material excess during manufacture, distribution, repackaging, or relabeling of the water treatment chemical product undergoing assessment to this Standard. The program shall be documented and communicated as part of training to employees who may be involved in the chemical manufacturing, distribution, repackaging, or relabeling processes.

6.6 Protection of air resources

The criteria in this section are intended to protect air resources by minimization or elimination of the production and release of greenhouse gases and of known persistent, bioaccumulative, toxic (PBT)\textsuperscript{12} air contaminants related to the water treatment chemical products’ manufacturing process, distribution, repackaging, or relabeling.

6.6.1 Prerequisite – Air emissions inventory

The manufacturer, distributor, repackager, and relabeler shall create and update an annual inventory of air emissions from their water treatment chemical products’ manufacturing process facility (see 4.3). This shall include scope 1 and scope 2 emissions\textsuperscript{5}. The inventory shall include a description of each source (e.g., heavy equipment) the type of expected emissions (e.g., diesel fumes), and the likely location of the source. Quantities of emissions shall be estimated or measured, but shall not be required to be tested. Inventory shall consider the presence of any ozone depleting substances\textsuperscript{14}, as well as other more typical emissions listed below:

- Carbon Dioxide (CO\textsubscript{2})
- Methane (CH\textsubscript{4})
- Nitrous Oxide (N\textsubscript{2}O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur Hexafluoride (SF\textsubscript{6})

6.6.2 Prerequisite - Air emissions reduction program

The manufacturer, distributor, repackager, and relabeler shall demonstrate an air emissions reduction program. The program shall include the manufacturing facility within the boundary in 4.3 related to the water treatment chemical product manufacturing, distribution, repackaging, or relabeling process. This shall be reviewed on annual basis.

\textsuperscript{14} <http://www.epa.gov/>
6.7 Global sustainability of water resources

Clean, treated water is essential for public health, a healthy environment, and a healthy economy. Communities, institutions and industries benefit from the use of water treatment products by the avoidance of public health risks that would attend the consumption or dissemination of pathogen-containing water. Water disinfection reduces the risk of waterborne diseases, thereby reducing the personal loss and costs of treating those diseases. Moreover, for many important uses, the economic value of water is a function of its quality, which is directly related to the efficacy of water treatment. Disinfectants and other treatment chemicals also play an important role in treating wastewater before it is discharged into the environment. This measure helps reduce infectious disease transmission as receiving waters may constitute a source of public water supply or be used for bathing, producing shellfish or irrigating crops.

The manufacturer, distributor, repackager, and relabeler shall earn one point each for a maximum of 3 points for documenting contributions to the global sustainability of water resources.

- Social responsibility as defined by the credits herein (1 point);
- Economic by demonstrating cost savings through the credits herein (1 point); or
- Environmental impacts reduction as defined by the credits herein (1 point).

The documentation shall be reviewed annually and provide at a minimum of one example of their product, processes or corporate practices contributing to the global sustainability of water resources.

7 Chemical product efficacy

Fitness of purpose sets criteria that the chemical product performs at or above recognized industry performance standards, in order to ensure that the incorporation of positive environmental attributes has not been undermined by lower-quality performance.

7.2 Prerequisite - Chemical content

The manufacturer shall document their chemical product meets or exceeds AWWA applicable standards (see annex D).

7.3 Chemical efficacy improvements

The manufacturer shall earn 2 points for documenting that their chemical product is designed and manufactured for improved efficacy under conditions of intended use. This shall be supported by quality control testing documentation such as required by AWWA Chemical Standards or NSF/ANSI 50. The testing documentation may be from the manufacturer or independent third party.

8 End-of-life management

The intent of the criteria in this section is to ensure that chemical products can be collected and reprocessed within the existing materials recycling infrastructure. Packaging is also included in the end of life consideration.

8.1 Water treatment chemical product repurpose, reuse, or reprocess (maximum of 2 points)
The manufacturer, distributor, repackager, and relabeler shall earn 1 point for having a program to collect spent or used chemical product. The program shall demonstrate that it meets at least one of the following criteria:

a) Repurposed into a different chemical product(s) group (e.g., water treatment to detergent product);

b) Reused for different specification for the same purpose (e.g., use more chemical to reach spec); or

c) Reprocessed by the original manufacturer for reformulation.

An additional point shall be earned for demonstration that the program includes take back of the spent or used chemical that encompasses all three criteria as defined in a) through c) above.

NOTE – As an example of spent or used chemical, consider a 20% sodium hydroxide for use in chlorine scrubbers. The customer returns the spent solution back to the manufacturer and they use it to make bleach.

8.2 Collection of packaging

The manufacturer, distributor, repackager, and relabeler shall earn 1 point for demonstrating a packaging collection program (including tracking) that exhibits the following at a minimum:

a) Replacing disposable totes and drums with small onsite bulk container (e.g., 15 gallon or 55 gallon drum, double walled) or other onsite tanks for refilling; or

b) Take-back process for reusable totes and drums (if applicable); or

c) Take-back process for single-use totes and drums (if applicable) for recycling (by either the manufacturer or user).

9 Corporate governance

9.1 Purpose

The criteria in this section are intended to encourage corporate/organizational leadership for social responsibility in the forms of transparency of data and activities, providing a desirable workplace, being involved in the local community, and supplier engagement in social responsibility.

9.2 Public commitment to sustainability

9.2.1 Prerequisite - Child and forced labor

The manufacturer, distributor, repackager, and relabeler shall have a policy for corporate governance that is publicly disclosed and shall include at a minimum:

– prohibition of using child labor; and
– prohibition of using forced labor.

9.2.2 Social accountability (maximum of 4 points)
The manufacturer, distributor, repackager, and relabeler shall earn 1 point for each of the items below (up to a maximum of 4 points) for releasing the following publicly (see definition of public disclosure in 3):

a) Annual findings under the company's registered or generally conforming:
   i. Responsible Care® 14001®
   ii. Responsible Care® Management System®
   iii. ISO 14001 registration®
   iv. National Association of Chemical Distributors Responsible Distribution®
   v. Or other equivalent type program

b) Product(s) life-cycle assessment findings prepared in conformance with ISO 14040 series, and independently peer reviewed;

c) Corporate or plant annual sustainability report (e.g., Global Reporting Initiative3 or SA 800010 or ISO 26000®); or

d) Annual environmental and social accountability targets and achievements.

9.3 Employer responsibility

9.3.1 Prerequisite - Employee turnover

The manufacturer, distributor, repackager, and relabeler shall quantify and document the average full time employee turnover rate (per year or two-year rolling average) at the facility where the chemical product is manufactured, distributed, repackaged, or relabeled.

9.3.2 Prerequisite - Employee injury rate

The manufacturer, distributor, repackager, and relabeler shall quantify and declare the average employee injury rate (per year or two-year rolling average) as required by the governing reporting agency at the facility where the chemical product is manufactured, distributed, repackaged, or relabeled. At a minimum, the report shall include occupational accidents, injuries, illnesses, and disease.

9.3.3 Prerequisite - Prevention of discrimination

The manufacturer, distributor, repackager, and relabeler shall demonstrate at the corporate level, prohibition of discrimination in the employment process (examples, see annex C).

9.3.4 Prerequisite - Health and safety program

The manufacturer, distributor, repackager, and relabeler shall ensure employee health and safety by documenting a program with measurable goals that detects, avoids, and responds to actual and potential threats to the health and safety of personnel at the facility where the chemical product is manufactured, distributed, repackaged, or relabeled.

The program shall include the following components:

a) An employee health and safety policy;
b) Documented procedures for the management of the system including a corrective action process that addresses regulatory compliance and actual and potential threats to employee health and safety;

c) Establishment and maintenance of employee health and safety metrics; and

d) Health and safety training available for employees.

9.3.5 Employee injury minimization

a) The manufacturer, distributor, repackager, and relabeler shall earn 1 point for documenting a program with measurable goals addressing employee injury minimization at the facility where the chemical product is manufactured, distributed, repackaged, or relabeled.

b) The manufacturer shall earn an additional point for documenting their injury rates are 1% below the Department of Labor, Standard Industrial Classification (SIC) codes industry average.

NOTE – The industry average injury rates for the particular SIC codes are easily referenced from the OSHA 200 log.

9.3.6 Major suppliers - manufacturers

The manufacturer shall earn 2 points for documenting that all major suppliers for the chemical products’ manufacturing process comply with:

- Employee turnover (9.3.1);
- Employee injury rate (9.3.2); and
- Employee injury minimization (9.3.3 a) only).

9.3.7 Suppliers (repackagers, relabelers)

The repackager and relabeler shall earn 2 points for documenting that their top supplier for the chemical products’ repackaging or relabeling process complies with:

- Employee turnover (9.3.1);
- Employee injury rate (9.3.2); and
- Employee injury minimization (9.3.3).

9.4 Community engagement

9.4.1 Prerequisite - Local recruiting

The manufacturer, distributor, repackager, and relabeler shall document net local employment (full-time equivalent basis) and local (metropolitan statistical area) sourcing expenditures (U. S. dollars spent or equivalent) per year or three-year rolling average.

9.4.2 Community financial investment (maximum of 4 points)

The manufacturer, distributor, repackager, and relabeler shall earn 1 point for investing in the community 1% or more of its net income in accordance with generally accepted accounting principles. The investment
shall be in the community where this chemical product is manufactured or where its corporate headquarters or associated facilities are located. Financial investments and net income shall be allowed to be aggregated across facilities where the water contact product is manufactured including corporate headquarters. This shall be averaged over the previous 3 years. For those companies in operation less than 3 years, the manufacturer shall use the initial year data to claim conformance to this credit; or averaging the first and second year data to claim conformance to this credit.

The manufacturer, distributor, repacker, and relabeler shall earn an additional 1 point for quantifiable impacts from the investment as above.

The manufacturer, distributor, repacker, and relabeler shall earn an additional 1 point if the investment is toward a sustainability initiative (such as those credits herein) in their community.

The manufacturer, distributor, repacker, and relabeler shall earn an additional 1 point if the investment is toward a global (outside the community) sustainability initiative (such as those credits herein).

9.4.3 Stakeholder public meetings (maximum of 3 points)

9.4.3.1 The manufacturer, distributor, repacker, and relabeler shall earn 1 point for documenting all of the following:

a) identifying community stakeholders and the process by which they were identified;

b) providing a communication channel for feedback from the community stakeholders; and

c) enabling communication including submittal of comments, feedback, suggestions and resolving grievances.

9.4.3.2 To earn this credit, the manufacturer, distributor, repacker, and relabeler shall meet 9.4.3.1. Then the manufacturer, distributor, repacker, and relabeler shall earn 1 additional point for demonstrating their process of evaluating stakeholder feedback (as above in 9.4.3.1). A corrective action plan shall be developed for each stakeholder issue submitted.

This shall be tracked on an annual basis. For those manufacturers with no feedback received annually, they shall provide additional documentation of at a minimum, annual outreach to stakeholders through media, website or mailings to promote feedback and shall earn this point.

9.4.3.3 To earn this credit, the manufacturer, distributor, repacker, and relabeler shall meet 9.4.3.1. Then the manufacturer shall earn 1 point for demonstrating response to feedback (as from 9.4.3.1 above) that directly relates to improvements covering credits within this Standard. This shall be tracked on an annual basis.

9.4.4 Corporate engagement (maximum of 2 points)

The manufacturer, distributor, repacker, and relabeler shall earn 1 point for documenting company-supported employee activities within the community where the chemical product is manufactured distributed, repackaged, or relabeled. Company-supported activities include but are not limited to donation of human resources, venues, or materials. This excludes activities deemed political in nature. This shall be tracked on an annual basis.
An additional point shall be earned for global (outside the community) donations of human resources, venues, or materials. This excludes activities deemed political in nature.

9.5 Financial leadership

Sustainability requires triple bottom line actions that are important to achieve social and environmental goals.

9.5.1 Corporate profitability

The manufacturer, distributor, repackager, and relabeler shall earn 1 point for demonstrating continued year-over-year (or 3 year average) corporate profitability.

9.5.2 Investment in research and development

The manufacturer shall earn 1 point for documenting an annual investment toward continual improvement in research and development activities that results in a quantifiable outcome such as a new innovative approach, use of new technology, efficiency in processes, training and education, etc. that applies to the chemical product or its manufacturing process.

9.5.3 Supplier satisfaction

9.5.3.1 The manufacturer shall earn 1 point for reporting the percentage of contracts with major suppliers that were paid in accordance with agreed terms, excluding agreed penalty arrangements. Terms may include scheduling of payments, form of payment, and other conditions. This may be calculated on a facility or corporate basis and shall be documented in the report.

9.5.3.2 The distributor, repackager, and relabeler shall earn 1 point for reporting the percentage of contracts with their suppliers that were paid in accordance with agreed terms, excluding agreed penalty arrangements. Terms may include scheduling of payments, form of payment, and other conditions. This may be calculated on a facility or corporate basis and shall be documented in the report.
## Annex A
(informational)

### Scorecards

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### 7 CHEMICAL PRODUCT EFFICACY - OPTIONAL CRITERIA MANUFACTURERS

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### 8 END OF LIFE MANAGEMENT - OPTIONAL CRITERIA MANUFACTURERS

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### 5 PRODUCT DESIGN - OPTIONAL CRITERIA
**DISTRIBUTOR, REPACKAGER, RELABELER (DS, RP, RL)**

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<th>RP</th>
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<td>5.3.1</td>
<td>Life cycle inventory (LCI)</td>
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<td>Contribution to Life Cycle Inventory</td>
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<td>Supplier audits</td>
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### 6 CHEMICAL PRODUCT MANUFACTURING PROCESS - OPTIONAL CRITERIA

**DISTRIBUTOR, REPACKAGER, RELABELER (DS, RP, RL)**

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<tr>
<th>Criteria</th>
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<tr>
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### 8 END-OF-LIFE MANAGEMENT - OPTIONAL CRITERIA

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<td>8.1</td>
<td>Water treatment chemical product repurpose, reuse, or reprocess</td>
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<td>8.2</td>
<td>Collection of packaging</td>
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9 CORPORATE GOVERNANCE - OPTIONAL CRITERIA
DISTRIBUTOR, REPACKAGER, RELABELER (DS, RP, RL)

<table>
<thead>
<tr>
<th>Criteria</th>
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<th>RP</th>
<th>RL</th>
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<tbody>
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<td>9.2.2</td>
<td>Social Accountability</td>
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<td>Employee injury minimization</td>
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<td>9.3.7</td>
<td>Suppliers (repackagers, relabelers)</td>
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<td>Community financial investment</td>
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<td>Stakeholder public meetings</td>
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<td>Corporate engagement</td>
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<td>Corporate profitability</td>
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<td>9.5.3.2</td>
<td>Supplier satisfaction</td>
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<td>DS</td>
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Annex B
(informational)\textsuperscript{15}

Key elements of a certification program for
Sustainability Assessment for Water Treatment Chemical Product Manufacturers, Distributors, Repackagers, and Relabelers

B.1 General

Declaring conformance to this Standard identifies that a manufacturer designs, develops, and creates products in a manner that is considered to be in some measure sustainable and/or environmentally preferable and that the distributor, repackager, relabeler meet sustainability criteria for the chemical product. Conformance to this Standard alone does not imply certification. The manufacturer, distributor, repackager, and relabeler can provide additional public confidence regarding the attainment of these goals by undertaking independent conformity assessment (certification).

B.2 Product(s) certification process

B.2.1 Selection of conformity assessment body

The applicant identifies a certification organization to perform the conformity assessment of the product(s) assessment process for conformance with this Standard.

B.2.2 Conformity assessment to standard

The certifying organization performs the necessary functions to determine whether the applicant’s operations and product(s) conform to the specified criteria. This may involve activities such as an audit of their facility, review of the product(s) formulation, testing, or review of documentation for assessing conformance with the specified criteria.

B.2.3 Issuance of product(s) certification

If the product(s) has been demonstrated adequately to meet the specifications described in this Standard, and any issues of nonconformance have been addressed, the certifying organization provides a product(s) certification to the applicant. This may include the provision of documentation of certification of the product(s) to the applicant, as well as inclusion of the product(s) on any publicly available lists of certified products maintained by the certifying organization. The certifying organization instructs the applicant regarding appropriate use of the registered certification mark of the certifying organization.

B.2.4 Monitoring of product(s) conformance

\textsuperscript{15} The information contained in this annex is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI’s requirements for an ANS. As such, this annex may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the Standard.
At intervals determined by the certifying organization, the continued conformance of the certified product(s) to the specified criteria is monitored using periodic facility audits, periodic retesting, or both.

### B.3 Suggested requirements for certifying organizations

A certifying organization offering a certification program for sustainability of water treatment chemical products should conform to the requirements of ISO/IEC DIS 17065, Conformity assessment – Requirements for bodies certifying products, processes and services.

#### B.3.1 Marking of certified product(s)

The certifying organization should specify requirements for marking of certified products. Requirements for product(s) marking should include, at a minimum:

- certified products should bear a registered certification mark of the certifying organization; and
- each product(s) should bear a statement of achievement status (e.g., conformance to NSF 416 - Distributor).

#### B.3.2 Listing certified companies

The certifying organization should maintain a published listing of all certified products. The listing format should include the following minimum information:

- company name and address;
- product(s) description;
- trademark / formulation designation; and
- each sustainable product(s) claim that has been successfully evaluated and is certified.

#### B.3.3 Audits

The certifying organization should conduct actual physical audits of all facilities and production locations of the certified company.

#### B.3.4 Corrective action

The applicant should take corrective action for all items of nonconformance found during audits and re-evaluation including:

- provisions for review and authorization for modifications to formulations;
- modifications to certified product(s) formulations; and
- documentation and authorization of the modification maintained on file.

#### B.3.5 Enforcement

To preserve the integrity of the registered certification mark of the certification organization, enforcement action should be taken by the certifier for the following:
– use of the registered trademark of the certifying organization on a non-certified product(s);
– general nonconformance;
– unauthorized change to certified products; and
– unauthorized shipment or disposal of products placed on hold.

B.3.6 Appeals

The certifying organization should have provisions for an appeals process as requested by any party directly affected by a decision, action, or inaction of the certifying organization.

B.3.7 Complaints

The certifying organization should provide for the following:

– investigation of complaints related to certified products;
– misuse of the registered trademark of the certifying organization by a certified company;
– use/misuse of the registered trademark of the certifying organization by a non-certified company; and
– certified company retention and disclosure of complaint records and remedial actions for certified products.

B.3.8 Advertising

A certifying organization should provide guidance to certified manufacturers regarding proper use of the registered trademark of the certifying organization on sales literature, technical publications, promotional materials, packaging, catalogs, and advertising.

B.3.9 Records

A certifying organization should have provisions for verification of complete certified company records including:

– purchased materials and ingredients; and
– production, shipment, and inventory.

B.3.10 Public notice

Provisions for issuing a public notice for nonconformance to any requirement of certification should be maintained by the certifying organization.

B.3.11 Confidentiality

The certifying organization should have a documented policy of non-disclosure of any confidential information supplied to the certifying organization by the company regarding the product(s), including formulations, components, processes, ingredients, and the identity of the company’s suppliers and distributors.
Annex C
(informational)

Prevention of Discrimination - Examples

As referenced in 9.3.5 Prerequisite - Prevention of discrimination, examples of prevention of discrimination statutes include but are not limited to:

- Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits employment discrimination based on race, color, religion, sex, or national origin;
- the Equal Pay Act of 1963 (EPA), which protects men and women who perform substantially equal work in the same establishment from sex-based wage discrimination;
- the Age Discrimination in Employment Act of 1967 (ADEA), which protects individuals who are 40 years of age or older;
- Title I and Title V of the Americans with Disabilities Act of 1990 (ADA), which prohibit employment discrimination against qualified individuals with disabilities in the private sector, and in state and local governments;
- Sections 501 and 505 of the Rehabilitation Act of 1973, which prohibit discrimination against qualified individuals with disabilities who work in the federal government; and
- the Civil Rights Act of 1991, which, among other things, provides monetary damages in cases of intentional employment discrimination.

16 The information contained in this annex is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI’s requirements for an ANS. As such, this annex may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the Standard.
Annex D
(informational)\textsuperscript{15}

AWWA Chemical Standards

Softening & Conditioning Chemicals
B200 Sodium Chloride
B201 Soda Ash
B202 Quicklime and Hydrated Lime

Disinfection Chemicals
B300 Hypochlorites
B301 Liquid Chlorine
B302 Ammonium Sulfate
B303 Sodium Chlorite
B304 Liquid Oxygen for Ozone Generation for Water, Wastewater and Reclaimed Water Systems
B305 Anhydrous Ammonia
B306 Aqua Ammonia (Liquid Ammonium Hydroxide)

Coagulation Chemicals
B402 Ferrous Sulfate
B403 Aluminum Sulfate - Liquid, Ground, or Lump
B404 Liquid Sodium Silicate
B405 Sodium Aluminate
B406 Ferric Sulfate
B407 Liquid Ferric Chloride
B408 Liquid Polyaluminum Chloride
B451 Poly (Diallyldimethylammonium Chloride)
B452 EPI-DMA Polyamines
B453 Polyacrylamide

Scale & Corrosion Control Chemicals
B501 Sodium Hydroxide (Caustic Soda)
B502 Sodium Polyphosphate, Glassy (Sodium Hexametaphosphate)
B503 Sodium Tripolyphosphate
B504 Monosodium Phosphate, Anhydrous
B505 Disodium Phosphate, Anhydrous
B506 Zinc Orthophosphate
B510 Carbon Dioxide
B511 Potassium Hydroxide
B512 Sulfur Dioxide
B550 Calcium Chloride

Taste & Odor Control Chemicals
B600 Powdered Activated Carbon
B601 Sodium Metabisulfite
B602 Copper Sulfate
B603 Permanganates
B604 Granular Activated Carbon
B605 Reactivation of Granular Activated Carbon

Fluoride Chemicals
B701 Sodium Fluoride
B702 Sodium Fluorosilicate
B703 Fluorosilicic Acid

B704 Poly (Diallyldimethylammonium Chloride)
## Annex E

(common informational)

### Common Elements of Environmental Managements Systems

<table>
<thead>
<tr>
<th>MANAGEMENT SYSTEM</th>
<th>COMPONENTS ADDRESSED</th>
<th>PROGRAM ELEMENTS</th>
<th>COMMON ELEMENTS</th>
</tr>
</thead>
</table>
| 1. Responsible Care Management System (RCMS) | Environmental, health, safety, and security (environmental not quite as stringent as for ISO 14001 or RC 14001); auditing required once every three years | ● Adhering to the Responsible Care Guiding Principles  
● Measuring and publicly reporting performance, using the Responsible Care Performance Measures  
● Applying the Modern Responsible Care Management System to achieve and verify results. | Environmental policy is defined by top management. It is appropriate to the nature, scale and environmental impacts of the organization’s activities, products and services. |
<p>| 2. ISO 14001 | Environmental | Sets the basis of how to manage the environmental aspects of business activities more effectively, while taking into consideration environmental protection and pollution prevention. A valid ISO: 14001 certificate shows an organization follows the most internationally recognized EMS principles. This standard is being revised (see footnote). | Planning includes identifying the environmental aspects of its activities, products and services within the defined scope of the EMS that it can control and those that it can influence; also includes procedures for legal requirements and establishing, implementing and maintaining documented environmental objectives and targets. |
| 3. RC 14001 | Environmental, health, safety, and security | Incorporates elements of RCMS and ISO 14001. | Implementation and Operation includes ensuring resources to establish, implement, maintain and improve the EMS. It also includes ensuring employee competence, training and awareness. It also includes establishing, implementing and maintaining a procedure for internal and external communication. Documentation and document control of the EMS are necessary. Operation control and emergency preparedness and response are also aspects of this area. |
| | | | Checking includes monitoring and measurement; evaluation of compliance; nonconformity, corrective action and preventive action; control of records; and internal audit. |
| | | | Management Review includes top management review of the EMS at intervals to ensure its continuing suitability, adequacy and effectiveness. Reviews shall include assessing opportunities for improvement and needed changes. |</p>
<table>
<thead>
<tr>
<th>MANAGEMENT SYSTEM</th>
<th>COMPONENTS Addressed</th>
<th>PROGRAM ELEMENTS</th>
<th>COMMON ELEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Responsible Distribution</td>
<td>Environmental, health, safety, and security</td>
<td>13 Codes cover: Senior Management Commitment &amp; Risk Management; Compliance Review &amp; Training; Carrier Selection &amp; Private Fleet; Handling &amp; Storage; Job Procedures &amp; Training; Waste Management &amp; Resource Conservation; Emergency Response &amp; Public Preparedness; Community Outreach; Product Stewardship; Internal Audits; Corrective &amp; Preventive Action; Document &amp; Records Control; and Security</td>
<td>Evidence of Conformance, similar to Checking in above row, is a major area of focus in the Responsible Distribution Specifications and Guidance Document.</td>
</tr>
</tbody>
</table>

Note - The International Organisation for Standardisation is working to revise the ISO 14001 standard; a final draft version is planned to be available during the summer of 2014, with final publication expected for January, 2015. <www.iso.org>
Annex F
(informational)

Example Boundary Diagrams

Example of a Boundary Diagram
Water Treatment
Chemical Manufacturing

supplier

Sub-contractor

Manufacturing facility

supplier

supplier

supplier

supplier