Proposed Revisions to the Standard For Sanitary Paper Products (GS-1)

Green Seal's Standard for Sanitary Paper Products

The GS-1 Standard was first issued in 1990. It covers bath tissue, paper towels, napkins, and other related products (See Edition 6.3 on Green Seal's website). The GS-1 Standard targets the two most detrimental sustainability impacts from the lifecycle of sanitary paper products:

Priority Targets of the GS-1 Standard

1.) **Carbon Emissions from Virgin Fibers:** Carbon emissions are the result of deforestation, production, and disposal of virgin fibers. The GS-1 Standard addresses this impact by requiring that products are designed with 100% recycled fibers, i.e. no virgin fibers are incorporated into the product design.

2.) **Pollution from Chlorine Bleaching:** Bleaching plant fibers with chlorine can result in the release of persistent organic pollutants into the air and water including dioxins and furans, and the carcinogen chloroform. These pollutants are toxic to humans and aquatic life. The GS-1 Standard addresses this impact by requiring a chlorine-free bleaching process, ensuring that all Green Seal certified sanitary paper products can accurately make the claim "Processed Chlorine Free" (PCF) -- a meaningful distinction for manufacturers and purchasers of environmentally preferable products[1].

Secondary Targets – Multi-attribute Lifecycle Requirements

Other important requirements in the GS-1 Standard include functional performance, post-consumer content, prohibitions on hazardous papermaking additives, a chlorine prohibition across the papermaking process, and minimized packaging.

Periodic Maintenance of Green Seal Standards

Green Seal maintains accurate and relevant leadership standards by periodically conducting revisions to 1.) to raise the bar of leadership, 2.) expand the scope, or 3.) address a minor issue. This proposed revision to the GS-1 Standard falls into the latter category – the correction of a minor issue for the purpose of increasing the overall beneficial outcome of product certification.

Overview of Proposed Revision

The GS-1 Standard for Sanitary Paper Products currently prohibits chlorine[2] in all phases the papermaking process. For this revision, Green Seal proposes to allow manufacturers to use chlorine only in the re-pulping phase and only for the purpose of breaking down waste products made with high amounts of wet-strength resins, such as paper towels. Green Seal has conducted a thorough review of the complex chemical reactions known to occur during the re-pulping process and concludes that allowing chlorine only for this specific case is unlikely to result in the formation of harmful chlorine by-products. Further details of the proposal are detailed in the sections below.

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[1] Green Seal also defines and allows agricultural residue (a pre-consumer fiber) as a recycled fiber, and therefore the designation is "Totally Chlorine Free" (TCF).

[2] Sodium hypochlorite and other chlorinated compounds

Chlorine in the Papermaking Process
The GS-1 Standard currently prohibits the use of chlorine and chlorinated compounds across all phases of the papermaking process. Green Seal notes eight specific phases: pulping, re-pulping, cleaning, screening, de-inking, washing, bleaching and papermaking. Green Seal's chlorine free requirements are highly protective and far exceed the requirements set by other ecolabels, which allow chlorine bleaching.

Green Seal sets this broad requirement as a precautionary measure: a strict hazard elimination approach to avoid any potential formation of air and water pollutants which are chlorine by-products including chloroform, dioxins, and furans. These by-products remain a major issue and result of the chlorine bleaching process, which remains prohibited by Green Seal, but is still implemented by many paper manufacturers globally and in North America.

The Re-Pulping Phase in the Papermaking Process
All paper products are designed to withstand breaking and ripping when wet – and therefore can be designed with a glue-like additive referred to as "wet-strength resins". When manufacturers re-process discarded paper products to make new sanitary paper, these resins must first be broken down via a phase called "re-pulping." Re-pulping methods to break down wet-strength resins include applications of heat and the addition of chemical additives. Sodium hypochlorite (bleach), a chlorinated compound, is a common chemical additive used in re-pulping which is efficient at breaking down wet-strength resins.

Formation of Hazardous By-Products
Chlorinated compounds pose the risk of the formation of hazardous by-products such as dioxin, furans, and chloroform, which are harmful to human health and aquatic life. In the re-pulping process, the formation of hazardous by-products is dependent on the pH of the re-pulped slurry: when using sodium hypochlorite, for example, the pH must remain above 9 (alkaline) or the cellulose material will degrade. The chemical reactions that form dioxin do not occur in alkaline conditions. Additionally, the levels of lignin – an organic material found in wood – are expected to be low in the fully processed pulp from recovered materials. Lignin is the substrate that reacts with chlorine to form dioxins and chloroform. With low levels of lignin, it is similarly unlikely for dioxins and chloroform to form. Green Seal's full scientific analysis of the formation of hazardous by-products is detailed in the full Revision Proposal, which will be published on Green Seal's website for public comment.

Beneficial Outcomes
While Green Seal maintains that a chlorine-free papermaking process is the goal, Green Seal concludes that there is sufficient evidence demonstrating that using a chlorine-based additive in the re-pulping process is unlikely to result in water pollution due to the physical and chemical parameters of that phase. Therefore, Green Seal proposes a flexible approach to improve the overall feasibility of this standard, greater uptake of this standard, and greater adoption of the two priority targets for sanitary paper products: 100% recycled content and chlorine-free bleaching. Additionally, this proposed flexible approach is designed to encourage the re-processing of industrial scraps and surplus products (products with high amounts of wet-strength resin), and therefore further incentivize waste recovery.

Seeking Your Feedback

Revision Proposal, Green Seal Standard for Sanitary Paper Products (GS-1)

Green Seal is inviting feedback on this proposed revision to the Green Seal Standard for Sanitary Paper Products (GS-1). We are actively soliciting feedback from stakeholders including industry experts, public health researchers, product designers, raw material suppliers, product testing laboratories, purchasers, end users, and the public.

To submit comments or schedule a conference call, contact us:

- by email at standards@greenseal.org
- by phone at 202-872-6400.

Proposed Revisions as Red-Lined Requirements of the GS-1 Standard

Text in the boxes below show the details of the proposed revisions.
The red text shows proposed additions.
The text ~~with strikethrough lines~~ are proposed deletions.

Proposed Revision: Exemption for Chlorine-Based Additives in Repulping

3.5. Material Processing

3.5.1 Chlorine Free. Products made from recovered fibers shall be *Processed Chlorine Free (PCF)*. Products made from agricultural residue shall be *Totally Chlorine Free (TCF).*

Additionally, chlorine or chlorine derivatives (e.g., elemental chlorine, chlorine dioxide, sodium hypochlorite, sodium chlorite) shall not be used during the following steps of the *papermaking process*: re-pulping, screening, deinking, and washing.

Exemption: Chlorine and chlorine derivatives can be used during the re-pulping process if necessary to break down *recovered material* with wet-strength resins.