Maine Department of Environmental Protection
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Sent via email: MainePackagingEPR@maine.gov

From: Annie Lane, Chair, Pressurized Cylinder Industry Association

Date: March 20, 2024

RE: Packaging Material Exemption Request for Packaging Stewardship Program

Thank you for the opportunity to provide feedback. We also provided feedback on this issue in our response on November 10, 2023.

The Pressurized Cylinder Industry Association (PCIA) was incorporated in June 2023 to represent the interests of the pressurized cylinder brands and producers, specifically to address extended producer responsibility legislation. PCIA is made up of leading brands supplying both refillable and non-refillable pressurized cylinders to US consumers, including Cascade Designs, Inc., The Coleman Company Inc., Johnson Outdoors Gear Inc., Manchester Tank, Worthington Industries, YSN Imports, and Zippo. PCIA is collaborating with additional impacted producers to implement a producer responsibility program for cylinders in Connecticut and is actively engaged with a number of other states, including Vermont, Oregon, and California, that are legislating similar programs.

Ability to Reduce the Volume of Packaging

Pressurized cylinders are federally regulated by the Department of Transportation (DOT). Title 49 of the Code of Federal Regulations defines hazardous materials, outlines transportation requirements by hazardous material type, and dictates the design of the packaging (e.g., pressurized cylinder) containing the hazardous material, including the cylinder material, wall thickness and strength. An excerpt from the DOT regulation governing pressurized cylinders is provided below:

> **49 CFR 178.35 – 178.75 Subpart C: Specifications for Cylinders**
>
> *This part prescribes the manufacturing and testing specifications for packaging and containers used for the transportation of hazardous materials in commerce.*
>
> *Subpart C defines the materials allowed and minimum wall thickness depending on the cylinder specification.*

Example requirements for steel type and minimum wall thickness are shown below for the DOT-4BA specification, which is commonly followed for refillable propane tanks.

Appendix A to Part 178 - Specifications for Steel

Table 1

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[Open-hearth, basic oxygen, or electric steel of uniform quality. The following chemical composition limits are based on ladle analysis:]

Designation	Chemical composition, percent-ladle analysis		
	Grade 1[1]	Grade 2[1 2]	Grade 3[2 4 5]
Carbon	0.10/0.20	0.24 maximum	0.22 maximum.
Manganese	1.10/1.60	0.50/1.00	1.25 maximum.
Phosphorus, maximum	0.04	0.04	0.045.[6]
Sulfur, maximum	0.05	0.05	0.05.
Silicon	0.15/0.30	0.30 maximum	
Copper, maximum	0.40		
Columbium		0.01/0.04	
Heat treatment authorized	([3])	([3])	([3]).
Maximum stress (p.s.i.)	35,000	35,000	35,000.

[1] Addition of other elements to obtain alloying effect is not authorized.

[2] Ferritic grain size 6 or finer according to ASTM E 112-96 (IBR, see § 171.7 of this subchapter).

[3] Any suitable heat treatment in excess of 1,100 °F., except that liquid quenching is not permitted.

[4] Other alloying elements may be added and shall be reported.

[5] For compositions with a maximum carbon content of 0.15 percent of ladle analysis, the maximum limit for manganese on ladle analysis may be 1.40 percent.

[6] Rephosphorized Grade 3 steels containing no more than 0.15 percent phosphorus are permitted if carbon content does not exceed 0.15 percent and manganese does not exceed 1 percent.

(f) *Wall thickness.* The minimum wall thickness of the cylinder must meet the following conditions:

(1) For any cylinder with an outside diameter of greater than 6 inches, the minimum wall thickness is 0.078 inch. In any case, the minimum wall thickness must be such that the calculated wall stress at the minimum test pressure may not exceed the lesser value of any of the following:

(i) The value shown in table 1 of appendix A to this part, for the material under consideration;

(ii) One-half of the minimum tensile strength of the material determined as required in paragraph (j) of this section;

(iii) 35,000 psig; or

(iv) Further provided that wall stress for cylinders having copper brazed longitudinal seams may not exceed 95 percent of any of the above values. Measured wall thickness may not include galvanizing or other protective coating.

An excerpt is shown below for the steel type and minimum wall thickness requirements for the DOT-39 specification, which is commonly followed for non-refillable propane tanks.

(1) *Steel.*

(i) The steel analysis must conform to the following:

Expand Table

	Ladle analysis	Check analysis
Carbon, maximum percent	0.12	0.15
Phosphorus, maximum percent	.04	.05
Sulfur, maximum percent	.05	.06

(d) *Wall thickness.* The minimum wall thickness must be such that the wall stress at test pressure does not exceed the yield strength of the material of the finished cylinder wall. Calculations must be made by the following formulas:

(1) Calculation of the stress for cylinders must be made by the following formula:

$$S = [P(1.3D^2 + 0.4d^2)] / (D^2 - d^2)$$

Where:
S = Wall stress, in psi;
P = Test pressure in psig;
D = Outside diameter, in inches;
d = Inside diameter, in inches.

(2) Calculation of the stress for spheres must be made by the following formula:

$$S = PD / 4t$$

Where:
S = Wall stress, in psi;
P = Test pressure i psig;
D = Outside diameter, in inches;
t = Minimum wall thickness, in inches.

Given these rules, there is little to no opportunity to reduce the quantity of the packaging material (e.g., the steel thickness) in relation to the volume of product.

Additional Justification for Exemption of Pressurized Cylinders

As noted in our previous submission, we also believe there are other reasons to exclude this packaging type.

Both pressurized cylinders (refillable and non-refillable) require much different collection and processing systems than other types of residential packaging (e.g., beverage containers, soup cans, plastic film). In addition, refillable cylinders already have functioning commercial reuse models and exchange systems designed to address these considerations.

These different considerations are included in Table 1.

Table 1 – Considerations related to collection, transportation, and processing of pressurized cylinders

	Considerations
Collection	• Cylinders are typically physically segregated from other recyclables at depots or in special publicly accessible containers (e.g., collection bins at parks) • Municipalities typically do not allow residents to place cylinders in curbside collection systems (recycling or garbage)
Transportation	• Health and safety risks exist if cylinders are compacted in a collection vehicle • Additional training, placarding, and inspections are required for transportation of hazardous materials
Processing	• Cylinders pose health and safety risks to workers at material recovery facilities (MRF) particularly in the baling process

	Considerations
	• MRFs do not have equipment to properly process cylinders (e.g., remove the gas safely and prepare for recycling)
Overarching Impacts	• Unique permitting requirements or specifications for the collection, storage, transportation and processing of pressurized cylinders (e.g., Fire Marshall, Department of Transportation requirements) • Communications with the public become more complex and the public is more likely to be confused if cylinders are included in a broader packaging program. For example, handling requirements are different.

Given the unique considerations in handling pressurized cylinders, dedicated collection, transportation, and management systems are required. These systems are not compatible with systems for packaging of non-hazardous products.

Because of these considerations, pressurized cylinders are typically included in regulations focusing on packaging for hazardous or special products rather than in regulations for packaging of non-hazardous products. By way of example, no Canadian residential packaging regulation includes pressurized cylinders. Instead, jurisdictions like Ontario[1], Quebec[2], Manitoba[3], Alberta[4], and British Columbia[5] include pressurized cylinders in a regulation for packaging for hazardous or special products. This approach allows the regulations to reflect the special circumstances described above for collection, transportation and management of pressurized cylinders and other types of packaging for hazardous or special products (e.g., management of residual contents).

Similar to the approach taken in Canada, California's packaging EPR regulation includes an exclusion for "packaging used to contain hazardous or flammable products regulated by the 2012 Federal Occupational Safety and Health Administration Hazard Communications Standard (29 C.F.R. 1910.1200)." A number of packaging laws in US States have excluded certain packaging for similar reasons (e.g., packaging related to drug prescriptions or pesticides/insecticides) but have not extended this rationale to pressurized cylinders. Similarly, including producers of cylinders, which require dedicated collection, transportation, and management systems, in the same producer responsibility organization (PRO) as producers of packaging for non-hazardous products

[1] Ontario Government. O. Reg 449/21 - Hazardous and Special Products, 2021. Available at https://www.ontario.ca/laws/regulation/r21449.
[2] Quebec Government. O.C.C 933-2022 – Recovery and reclamation of products by enterprises – Amendment. Available at http://www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=1&file=105769.pdf.
[3] Manitoba Government. Household Hazardous Material and Prescribed Material Stewardship Regulation, 2010. Available at https://web2.gov.mb.ca/laws/regs/annual/2010/016.pdf.
[4] Alberta Government. Extended Producer Responsibility (EPR) for Packaging, Paper Products, Single-Use Plastics, as well as Hazardous and Special Products, 2021. Available at https://www.alberta.ca/circular-plastics-economy-engagement.aspx.
[5] British Columbia Government. Advancing Recycling in B.C.: Extended Producer Responsibility Five-Year Action Plan 2021-2026. Available at https://www2.gov.bc.ca/assets/gov/environment/waste-management/recycling/recycle/extended_producer_five_year_action_plan.pdf

that can be safely collected through commingled curbside collection adds administrative complexity and reduces the effectiveness and efficiency of both collection systems.

Finally, refillable pressurized cylinders require separate consideration from non-refillable cylinders due to the existence of current commercial solutions for reuse and exchange of these cylinders. For example, propane exchange systems already provide a robust reuse system, achieving high recovery and reuse rates relative to other packaging on the market. As a result, inclusion of refillable pressurized cylinders in producer responsibility legislation creates unnecessary regulatory burden for this category of cylinders.

As a result, we recommend Maine DEP exclude both refillable and non-refillable pressurized cylinders.

Again, we appreciate the opportunity to provide comments and would be pleased to discuss any questions you might have.

Sincerely,

Annie Lane, Chair
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