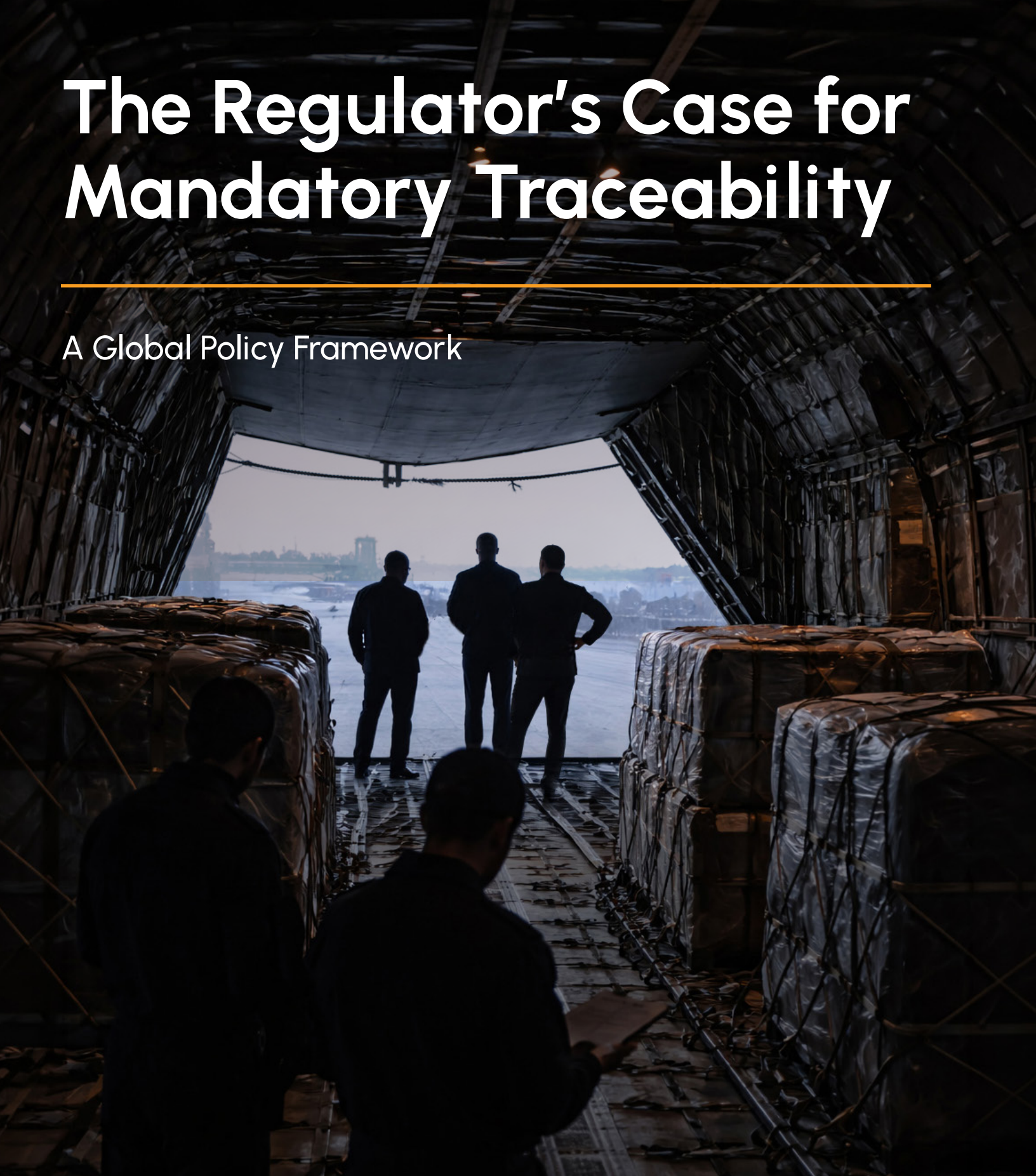


The Regulator's Case for Mandatory Traceability

A Global Policy Framework





1. When Participation Is Optional, Verification Fails at the Moment It Matters Most

Voluntary traceability programs share a common design flaw: they ask supply chain participants to disclose the information that a compliance failure would expose. Under ordinary conditions, that arrangement works well enough to produce the appearance of transparency, because compliant firms have every incentive to participate and to demonstrate it. The design fails precisely when demand for verification rises: at the point of an enforcement action, a public health event, or a market disruption. The participants most likely to be non-compliant are also the ones with the strongest incentive to withhold data or exit the reporting system altogether. A traceability regime that cannot compel disclosure from exactly those actors produces confidence without producing evidence.

This is a structural problem, not a defect in any single voluntary program's design. Self-reported documentation, by definition, has no independent mechanism forcing production of the record when the reporting party's interest runs the other way. Two current enforcement trends illustrate the consequence.

Forced-labor import enforcement. In the United States, Section 307 of the Tariff Act of 1930, as applied through the Uyghur Forced Labor Prevention Act, creates a rebuttable presumption that goods from designated sources are made with forced labor unless the importer can produce clear and convincing evidence otherwise.¹ In the European Union, Regulation (EU) 2024/3015 takes a parallel but distinct approach, prohibiting the placing, sale, or export of any product made with forced labor at any stage of production, regardless of origin, once it takes effect in December 2027.² Both regimes shift the evidentiary burden onto the party best positioned to produce a verifiable record, precisely because voluntary supplier attestation had not resolved the underlying verification gap.

Cost of inaction. For customs authorities and trade ministries, an unverifiable supply chain claim carries a concrete cost: a detained shipment, a delayed clearance, or a mutual recognition arrangement that cannot be extended because a partner jurisdiction cannot independently confirm the underlying claim. Each outcome is denominated in trade volume, legal exposure, or regulatory credibility, and each traces back to the same root cause: a system that asked for disclosure but had no way to compel or independently confirm it.

2. Why Self-Reported and Proprietary Systems Cannot Close the Gap

Existing approaches to supply chain verification generally fall into two categories, and neither closes the structural gap between a disclosure requirement and an independent way to confirm it.

Self-reported documentation regimes ask an importer, exporter, or producer to attest to origin, labor conditions, or chain of custody, typically through paper or PDF-based certificates of origin, supplier declarations, or audit summaries. These documents can be accurate. They can also be produced without independent verification, and no structural mechanism distinguishes an accurate declaration from an inaccurate one at the point of submission. Verification, when it happens, happens later, through investigation, by which point a shipment has typically already cleared.

Proprietary platform solutions digitize the record and, in some cases, add cryptographic integrity to prevent alteration after the fact. This solves part of the problem but introduces a different weakness: vendor dependency. A jurisdiction that builds enforcement infrastructure around one vendor's proprietary data model has no assurance that the same standard of verification applies to a shipment, or a supply chain relationship, that touches a different vendor's system, or none at all. Fragmentation across jurisdictions compounds this: a verification framework built to one country's specification does not necessarily interoperate with a trading partner's framework, which undermines the kind of mutual recognition that trade facilitation frameworks such as the WTO Trade Facilitation Agreement are designed to support.³

Regulated-commodity licensing regimes offer an instructive comparison. Across domains as varied as pharmaceutical distribution, precious-metals refining, and other controlled-goods production, jurisdictions have adopted mandatory, license-based tracking as the compliance mechanism rather than voluntary attestation. Under the EU's Falsified Medicines Directive and its implementing Delegated Regulation, the manufacturer assigns a unique serialized identifier to every prescription medicine pack sold in the EU and uploads it to an independent repository, but that identifier must be separately verified against the repository, and decommissioned, by the pharmacist at the point of dispensation, not simply accepted on the manufacturer's own record.⁴ Under the EU's Conflict Minerals Regulation, importers of tin, tantalum, tungsten, and gold above a defined threshold must conduct supply chain due diligence and are subject to independent audit, rather than self-certifying origin.⁵

Read together, the two regimes share three design elements, independent of sector: a mandate that applies to every covered participant rather than a self-selected subset, an authentication or audit step performed independently of the party being checked, and standing regulatory access to the record rather than production on request. Where these three elements are present, the enforcement posture shifts: verification happens at the point of the transaction rather than after a shipment, or a dispensed medicine, has already reached the market. Where any one is absent, most commonly the independent authentication step, the same adverse-selection problem that limits voluntary systems tends to reassert itself.

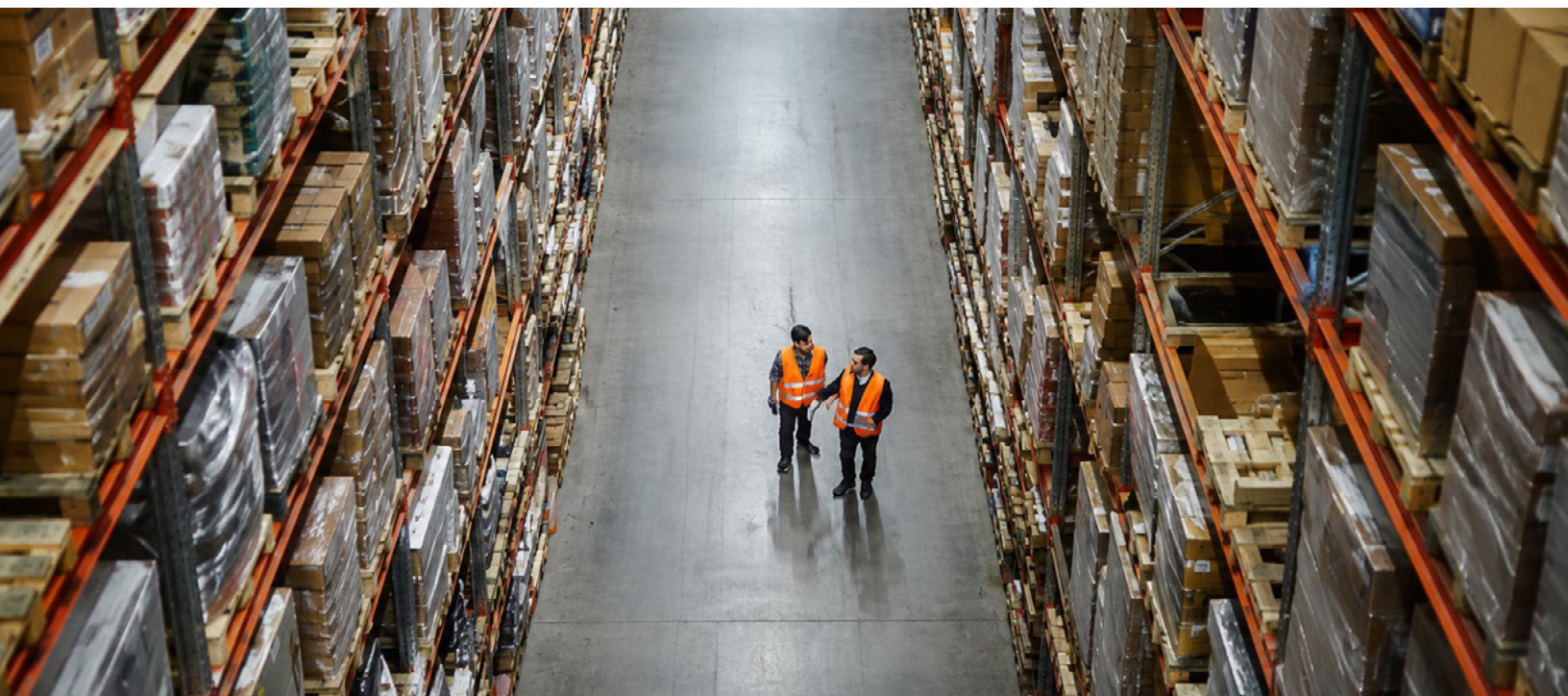
The structural gap, in short, is not a technology gap. Digitizing a self-reported record does not solve it. The gap is the absence of three things together: a mandate that applies uniformly, an authentication function independent of the party being verified, and a government access right that does not depend on the verified party's cooperation.

3. An International Consensus Standard, Not a Bespoke National Specification, Is the Appropriate Foundation

If mandatory traceability is the right policy direction, the next question is what technical foundation a mandate should specify. There is a strong case, grounded in existing trade obligations, for building on an international consensus standard rather than a specification built for a single jurisdiction.

The WTO Agreement on Technical Barriers to Trade directs member governments to use relevant international standards, or the relevant parts of them, as a basis for their technical regulations, except where such standards would be an ineffective or inappropriate means of fulfilling the legitimate objective pursued.⁶ The logic is straightforward: a national regulation built on an internationally recognized standard is more likely to be recognized by trading partners, reducing the risk that a legitimate domestic traceability requirement functions, in practice, as a non-tariff barrier. A specification built for one jurisdiction alone has to be separately evaluated, and often separately implemented, by every trading partner that wants to recognize it, which slows adoption and limits interoperability exactly where interoperability is most valuable.

This logic extends beyond the TBT Agreement's own text. The EU Carbon Border Adjustment Mechanism requires importers of covered goods to report embedded emissions data, verified through an accredited verification process, ahead of the definitive regime's certificate obligations.⁷ The OECD Due Diligence Guidance for Responsible Supply Chains, while not itself binding, has been incorporated by reference into binding EU law: the EU's Conflict Minerals Regulation requires covered importers of tin, tantalum, tungsten, and gold to conduct due diligence consistent with the OECD Guidance, converting a voluntary international framework into an enforceable import condition.⁸ Both examples share the same architecture as the TBT Agreement's underlying logic: a government mandates compliance, and compliance is measured against an internationally recognized, independently maintained standard rather than a domestically invented one.





A conformity assessment framework built on this logic separates into four functions that must operate independently of one another for the framework to hold up under scrutiny: tracking, which records the movement and custody of goods; authentication, which independently confirms that a given record corresponds to what it claims to represent; validation, which checks the record against the applicable rule set; and oversight, which sits with the relevant government or international authority and retains final decision-making power. The separation of these four functions is not an implementation detail. It is the mechanism that prevents any single party, including the party doing the tracking, from being in a position to both generate a record and vouch for its own accuracy.

4. What ASTM D8558-25 Specifies, and What Conformance Requires

ASTM International's D8558-25, Standard Guide for Supply Chain Traceability, Authentication, Verification, Validation, and Oversight Using Emerging Technologies Including Blockchain, was developed through ASTM's open, multi-stakeholder consensus process and published in 2025 by Subcommittee F49.06.⁹

The guide specifies the four-function separation: what data must be captured at each stage of a good's movement through the supply chain, what independent authentication is required before a record can be treated as verified, who is positioned to validate a record against the applicable rule set, and how oversight authority is retained by the relevant government or accreditation body rather than by the party generating the record. It incorporates by reference the ISO/IEC standards governing the competence of certification bodies (ISO/IEC 17065), testing laboratories (ISO/IEC 17025:2017), and accreditation bodies (ISO/IEC 17011), and it references the United States' OMB Circular A-119 directive to use voluntary consensus standards where they exist, at Section 13.2.3.¹⁰

Conformance to D8558-25 means a platform's architecture actually performs the four separated functions the standard specifies, with authentication and oversight genuinely independent of the tracking function, not merely that the platform references the standard's name. This distinction matters for procurement leads evaluating vendor claims: a system that performs tracking and calls the result "authenticated" without an independent authentication step is using the standard's vocabulary without conforming to its requirements.

5. What Standards-Conforming Infrastructure Gives Regulators, and Where TaaP Fits

TaaP is infrastructure conforming to D8558-25's tracking and rules-based validation functions. For a mandate built on this architecture, the practical implication for regulators is standing, real-time query access to a record whose accuracy does not depend on the verified party's cooperation, because the record is authenticated independently of TaaP's tracking.

TaaP records participant-attested chain-of-custody data at each supply-chain tier and checks incoming records against the applicable rule set, flagging goods that appear downstream without a verified upstream record. Blockticity, operating independently, performs authentication, issuing tamper-evident, blockchain-anchored certificates at each recorded event. Oversight, per the standard's separation-of-functions requirement, remains with the relevant government authority — customs administration, sanctions enforcement body, or sector regulator. TaaP neither authenticates nor exercises oversight; it does not replace the independent validators, accreditation bodies, or government authorities the standard preserves.

This structure is worth stating plainly rather than leaving as an implicit assumption, because it addresses a legitimate question a ministry evaluator should ask: an entity that built infrastructure conforming to a standard has an obvious interest in that standard being adopted and mandated. The honest answer is not that the interest doesn't exist. It is that the standard's separation-of-functions requirement is specifically designed so that no single participant, including TaaP, is in a position to both generate the tracking record and vouch for its own accuracy. TaaP's conformance is auditable against the standard's own text by an independent party, the same check any other conforming platform would have to pass.





6. What a Mandate Should Specify and Recommended Next Steps

The case for mandatory traceability does not depend on TaaP. It depends on a structural observation: voluntary traceability regimes fail at the point where verification matters most, because they ask for disclosure from parties whose incentive, at that point, runs the other way. Mandatory regimes close that gap only when they combine three design elements: a mandate that applies uniformly to every covered participant, an authentication function independent of the party being tracked, and a government access right to the verified record that does not depend on the tracked party's cooperation. International consensus standards, rather than bespoke national specifications, are the appropriate foundation for such a mandate, both because the WTO TBT Agreement directs governments toward them and because a standard maintained by an international, multi-stakeholder body is more likely to be recognized by trading partners than a specification built for one jurisdiction alone.

- A government considering a sector-specific traceability mandate should specify, at minimum:
- The scope of covered goods or sectors, and the point in the supply chain at which the tracking obligation begins;
- A conformity assessment requirement referencing a recognized international standard, such as ASTM D8558-25, rather than a bespoke technical specification;
- An authentication requirement performed independently of the entity conducting tracking, consistent with the standard's separation-of-functions structure;
- A government query or audit access right to the verified record, exercised on the government's own initiative rather than on request to the tracked party;
- Accountability provisions for licensees or covered participants, including consequences for non-participation and for falsified records; and
- A mutual recognition provision, consistent with the WTO TBT Agreement and Trade Facilitation Agreement, allowing conformity assessment outcomes to be recognized by trading-partner jurisdictions applying the same standard.

For a ministry or customs authority evaluating this approach, the appropriate next step is a structured review: a conformity assessment gap analysis against D8558-25's four-function requirement, applied to the specific sector and jurisdiction under consideration, to determine what a mandate would need to specify and what existing infrastructure, if any, already meets the requirement.

1. Tariff Act of 1930, Section 307 (19 U.S.C. § 1307); Uyghur Forced Labor Prevention Act, Pub. L. 117-78.
2. Regulation (EU) 2024/3015 of the European Parliament and of the Council of 27 November 2024 on prohibiting products made with forced labour on the Union market, Official Journal L 2024/3015 (12 December 2024), Article 3; applicable from 14 December 2027.
3. WTO Agreement on Trade Facilitation (2017).
4. Directive 2011/62/EU (Falsified Medicines Directive), amending Directive 2001/83/EC; Commission Delegated Regulation (EU) 2016/161, Articles 25(1) and 33.
5. Regulation (EU) 2017/821 laying down supply chain due diligence obligations for Union importers of tin, tantalum, tungsten, and gold from conflict-affected and high-risk areas.
6. WTO Agreement on Technical Barriers to Trade, Article 2.4.
7. Regulation (EU) 2023/956 establishing a carbon border adjustment mechanism.
8. Regulation (EU) 2017/821 laying down supply chain due diligence obligations for Union importers of tin, tantalum, tungsten, and gold from conflict-affected and high-risk areas; OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas.
9. ASTM D8558-25, ASTM International, developed by Subcommittee F49.06. Verify title and publication details at [astm.org](https://www.astm.org).
10. ISO/IEC 17065 (no year cited by D8558); ISO/IEC 17025:2017; ISO/IEC 17011; OMB Circular A-119 (revised January 27, 2016), referenced within D8558-25 Section 13.2.3.