

Seagate Product Environmental Compliance Hazardous Substance Management

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Highlights of Seagate's Product Stewardship System

Alignment to standards

- Seagate uses IPC 1752 as our materials reporting format
 - IPC 1752 is an open, industry data standard, not a Seagate-specific format

Full disclosure

- “FMD” (Full Materials Disclosure) is used to manage compliance to changing regulations and customer specifications
- Software automation is used to gather and manage data, grade compliance

Stability

- Supplier reporting requirements and formats seldom change

Security

- Seagate does use third party content collection services, but all data are maintained only in Seagate systems – and supplier data are kept confidential

Supplier responsibility

- Suppliers must provide full-disclosure data
- Suppliers are responsible for engaging third party (WSP) services

Seagate products must meet both regulatory and customer requirements

RoHS (and RoHS 2)

- Full substance data is required by customers
- Lab reports are required to meet customer and regulatory requirements
- Exemptions are used, but are limited by some customers
- Customer restrictions are much tighter than RoHS

REACH and other new regulations

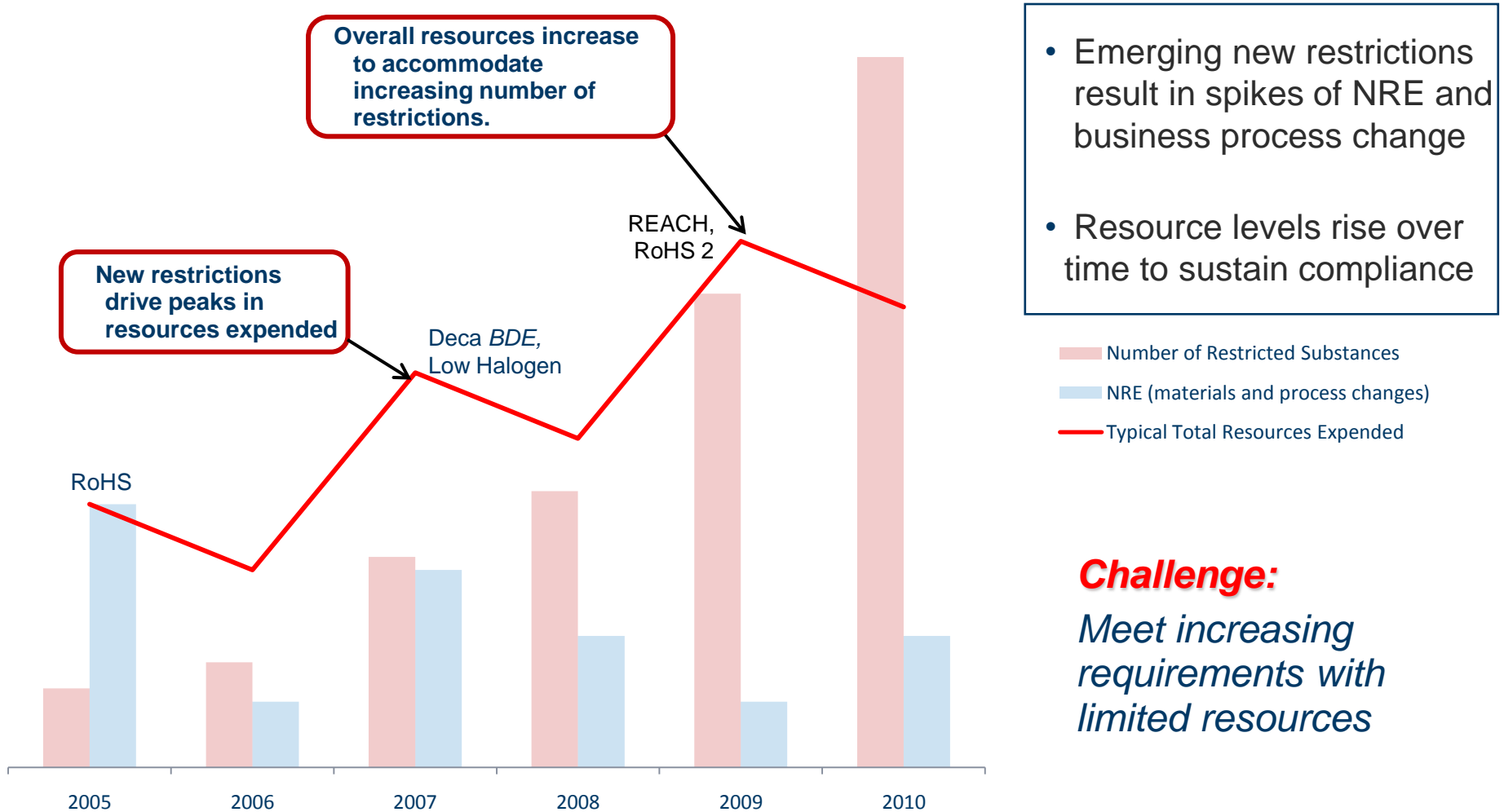
- Managing changing SVHC lists is a key challenge
- Homogeneous material level reporting enables compliance to article-level restrictions
- 3TG

Nonregulatory restrictions

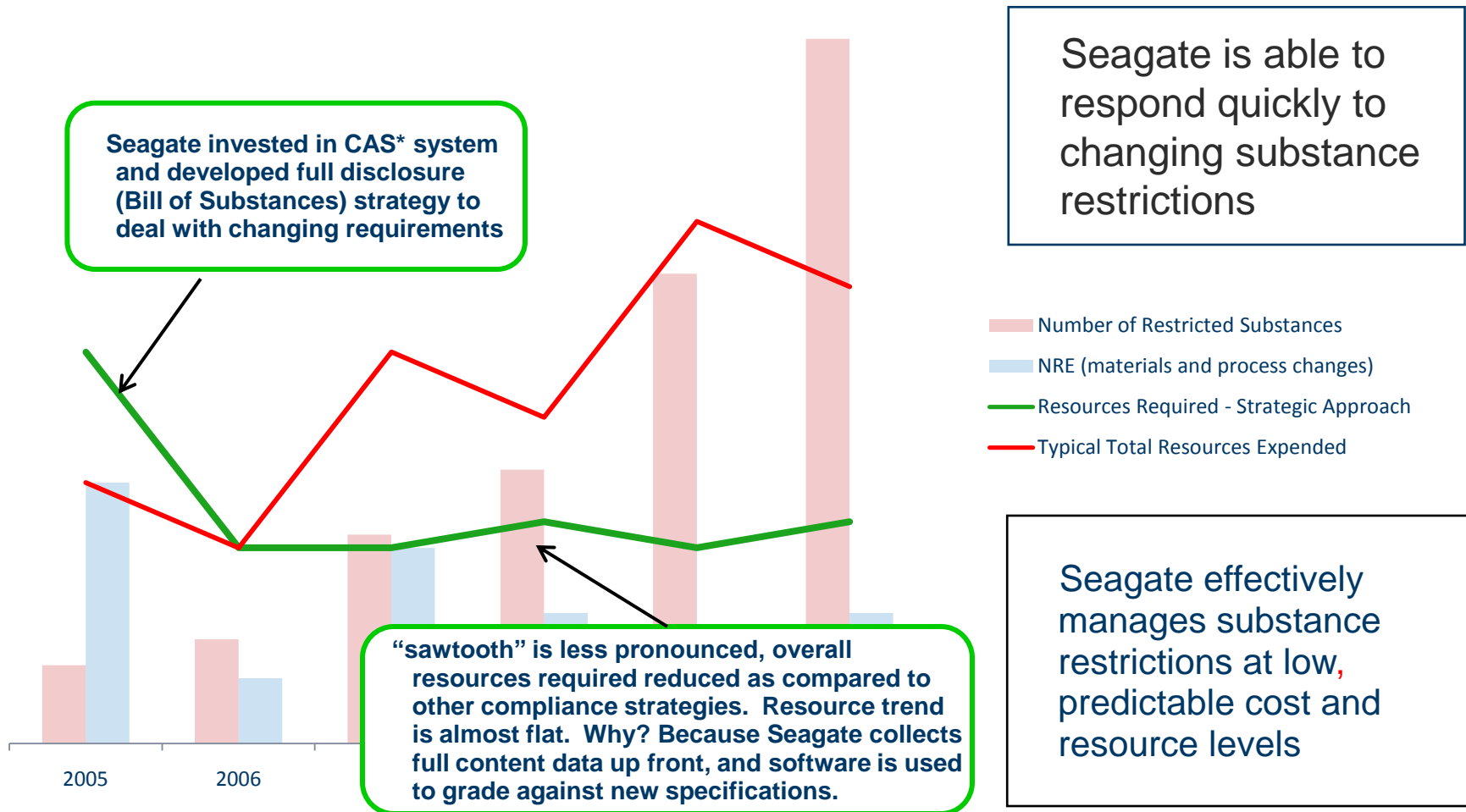
- Customers must meet market and consumer demands
- “Low Halogen”, BFR/PVC-free, phthalates, etc.

Seagate manages these requirements using “FMD” (Full Materials Disclosure)

Resources required to **react to** new substance restrictions typically follow a 'sawtooth' line, and increase over time



By investing early in full disclosure data, Seagate has been able to flatten the 'sawtooth' in resource requirements

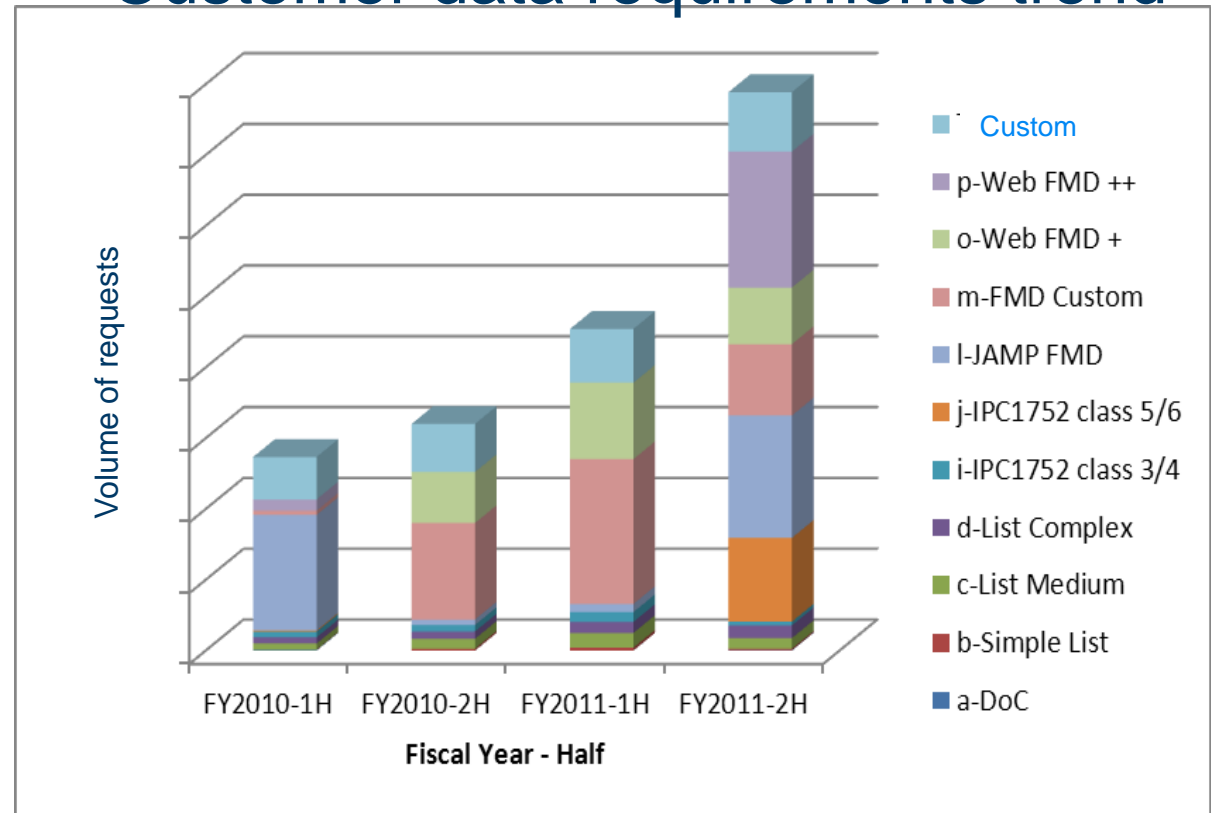


*CAS – Compliance Assurance System, Seagate’s materials content compliance system

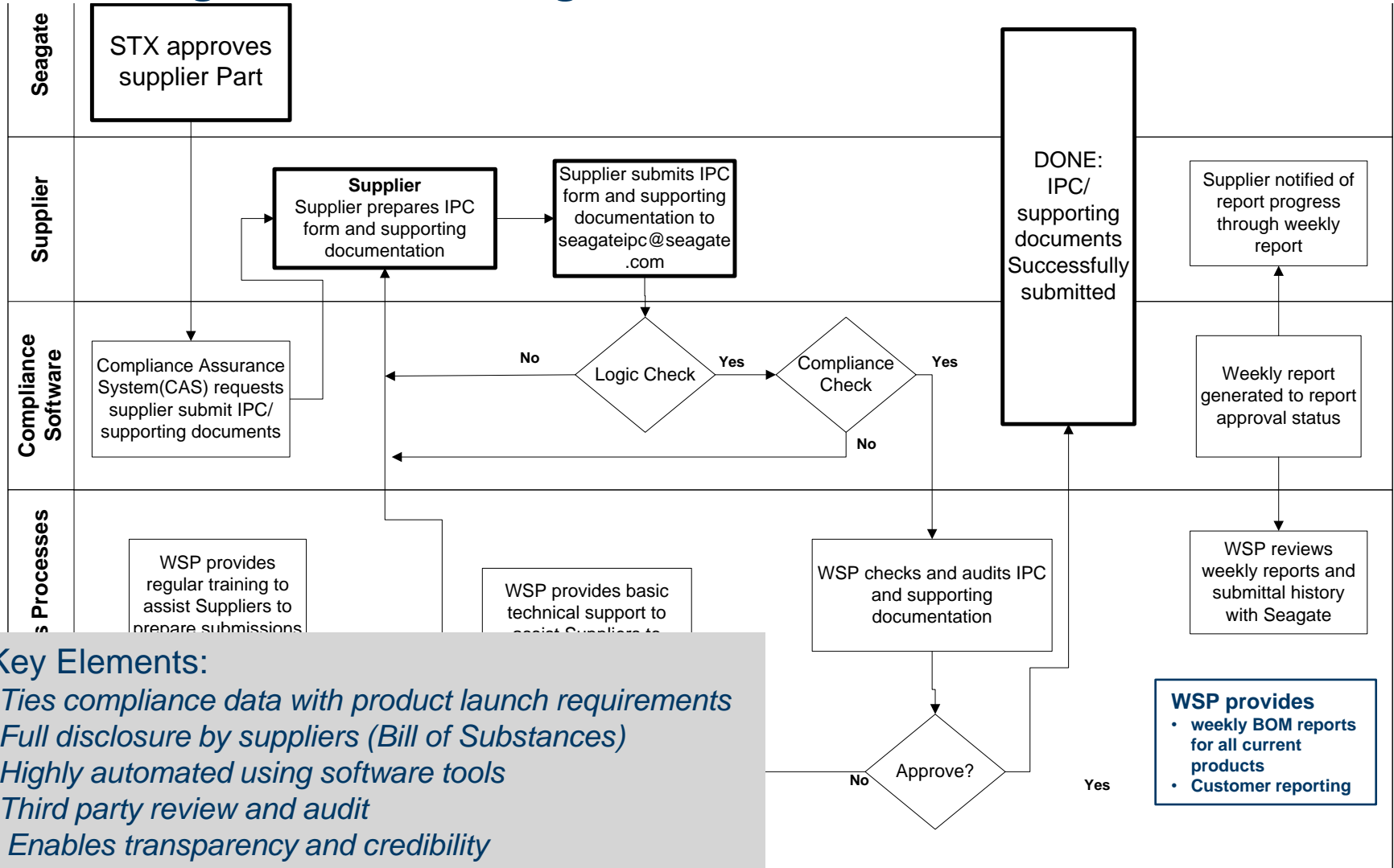
Seagate's requirements are based on customer demands for data

- Driven by their market and regulatory requirements, Seagate's customers are increasingly demanding full materials and substance disclosure
- Seagate collects data in the standard IPC 1752 format, and we prepare data for customers in many different formats
- IPC 1752 Class 5 (full disclosure) reporting allows Seagate to meet all customer requirements

Customer data requirements trend



Seagate compliance incorporates supplier full disclosure, with third party data review and audit. Software automation is used to gather and manage data.



*WSP is Seagate's outsourced business partner

Supplier materials content data are critical to Seagate's product launch process

Product Launch Requirements

- **Bill of Materials Review:** All parts used in production must be fully documented and approved in the Seagate "CAS"* software system (complete Bill of Substances)
 - Full data packages for each supplier part are received, processed through software, and must pass review by 3rd party contractor
 - All RoHS and Low Halogen lab reports approved and current
- Product Audit: Third party audit testing of the final product must be completed and pass
- Data Audit: Data are compared supplier-to-supplier and subject to "sanity check"

Count-down to full compliance

- *During new product launch every product bill of materials is reviewed weekly by a cross-functional compliance team until full product compliance is achieved. Documentation requirements and processes are defined in specs and procedures.*
- *Every part number is checked for full compliance, including IPC 1752 data and lab reports*
- *Product "Bill of Substances" results from complete FMD data*
- *Products are tracked through production period*
- *Any engineering changes, supplier changes, etc. are tracked to compliance, and are managed via engineering change procedures*

**CAS: Compliance Assurance System – Seagate's FMD process, including software tools.*

Thank You

