

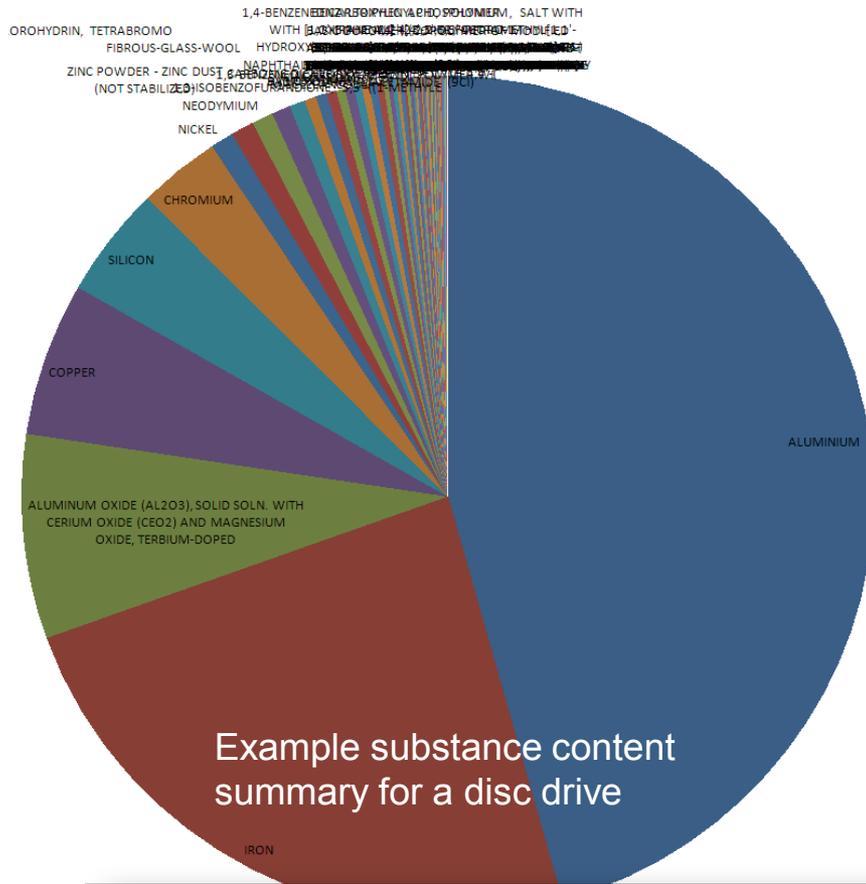
Seagate's Full Disclosure Requirement for Suppliers

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What's in a disc drive? Full disclosure helps us understand what substances are in our products

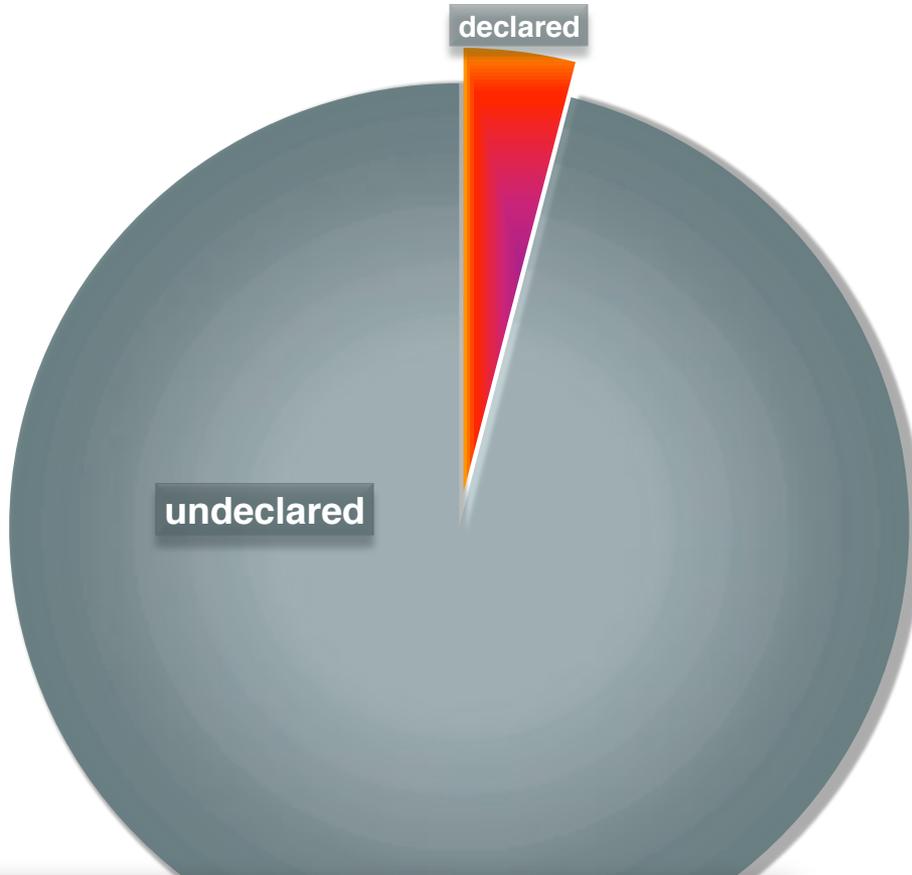


Seagate's blueprint for compliance relies on:

- Executive support
- A detailed specification
- Leveraging standards
- Full substance disclosure
- Software automation and other tools to enable full reporting
- Supplier responsibility

Seagate tries to gather as much information as possible about all of the substances contained in every material in our products. We're working to identify and close the gaps on full substance disclosure by our suppliers.

List-based disclosure is based on what's typically NOT in a product (restricted substances).

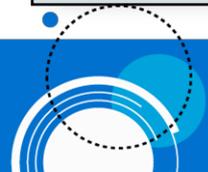


While hundreds of substances are considered restricted or reportable, these substances typically comprise only a small percentage of any material.

The rest of the composition is considered innocuous, and therefore is not reported.

But what happens when we change our minds about what is and is not considered toxic?

It's difficult to predict what substances will be restricted in the future. Knowing more about substances contained in products helps lower the cost of responding to changing restrictions.



“Full Disclosure” means different things to different companies. Seagate’s approach requires full substance-level disclosure

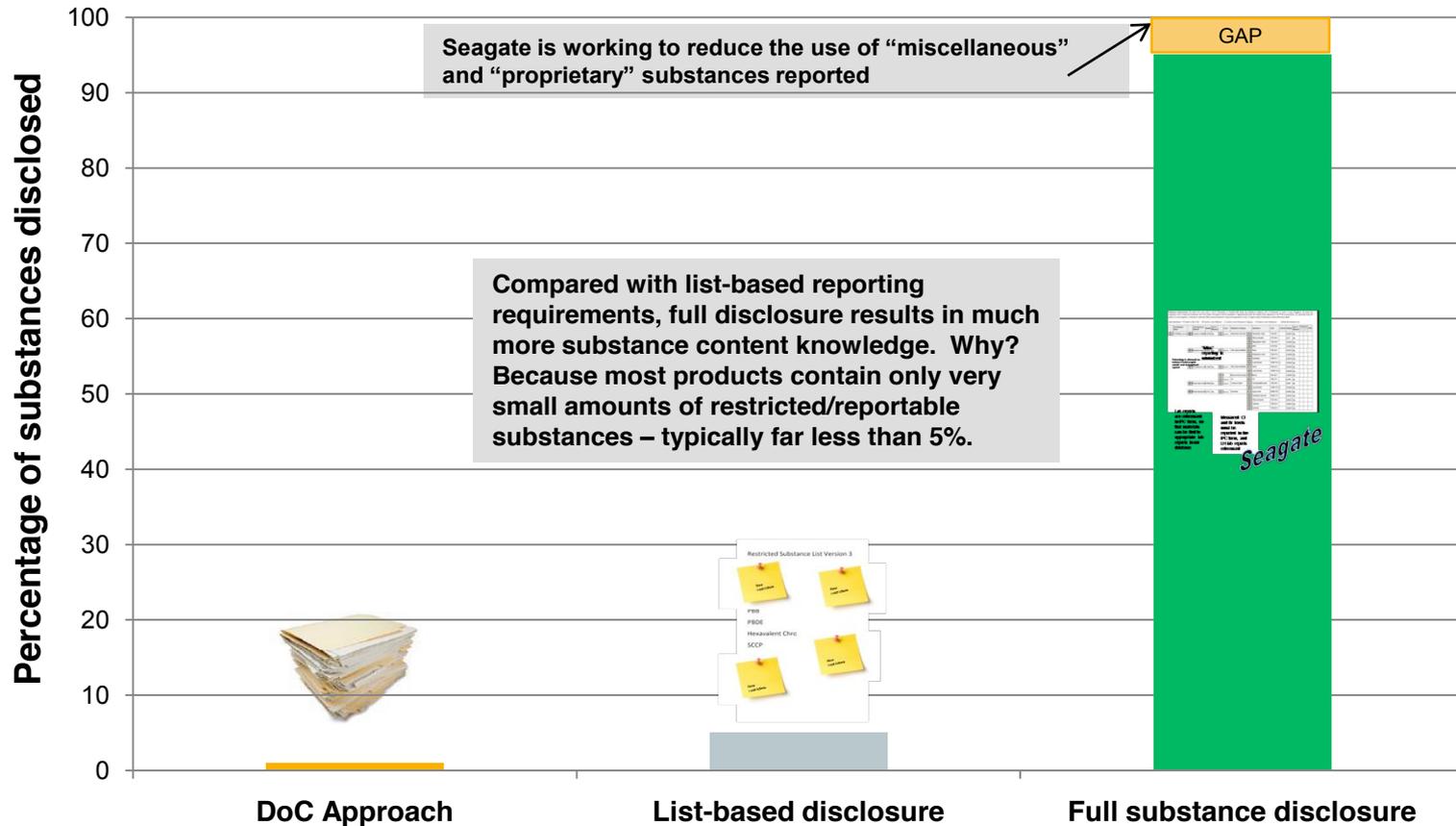
	Seagate full disclosure	List-based full disclosure
CAS numbers used	Seagate lists about 20,000 CAS numbers, and we will add new CAS numbers on request	Typically limited to a list of 200-500 CAS numbers
Required disclosure	All substances must be disclosed where possible	Reporting is only required for substances on restricted list
“Mass Balance”	Seagate software highlights any gaps between declared substances and total material mass	Not applicable – MOST of the mass of material is undeclared
Miscellaneous and Proprietary materials	Seagate is working to minimize Misc. and Proprietary disclosures. Misc. and Proprietary declarations equate to increased risk of noncompliance to new restrictions as well as increased future cost.	Since only listed substances are declared, MOST of the material mass is not declared.

Seagate Full-Disclosure Requirement:

Suppliers are required to disclose by CAS number and concentration (or mass) every constituent substance in every homogeneous material. We’re pressing our suppliers to substantially reduce or eliminate their declarations of Miscellaneous and Proprietary substances.



Full disclosure results in a much more complete picture of substance content than standard list-based systems.



There are a myriad of product content restrictions placed on suppliers in the electronics industry

Restricted Substances Regulations

RoHS

- Lead (1000 ppm)
- Mercury (1000 ppm)
- Hexavalent chromium (1000 ppm)
- PBB (1000 ppm)
- PBDE (1000 ppm)
- Cadmium (100 ppm)

REACH

- SVHCs (>20) restricted to 1000 ppm in article

Other

- RoHS II will restrict phthalates, others
- PFOS, HBCDD, other restrictions
- Formaldehyde
- Dimethyl fumarate - DMF - (desiccant additive)

Non – Regulatory Restrictions

RoHS

- Lead (20-100 ppm)
- Mercury (nondetect)
- Hexavalent chromium (nondetect)
- PBB/PBDE (nondetect)
- Cadmium (50ppm)

Halogen Free (Includes PVC/BFR Free)

- Chlorine (900 ppm)
- Bromine (900 ppm)
- Antimony Trioxide (900 ppm)

JAMP*/Japanese Green Procurement

- Restricts many potentially toxic substances, encompassing regulated and non-regulated substances

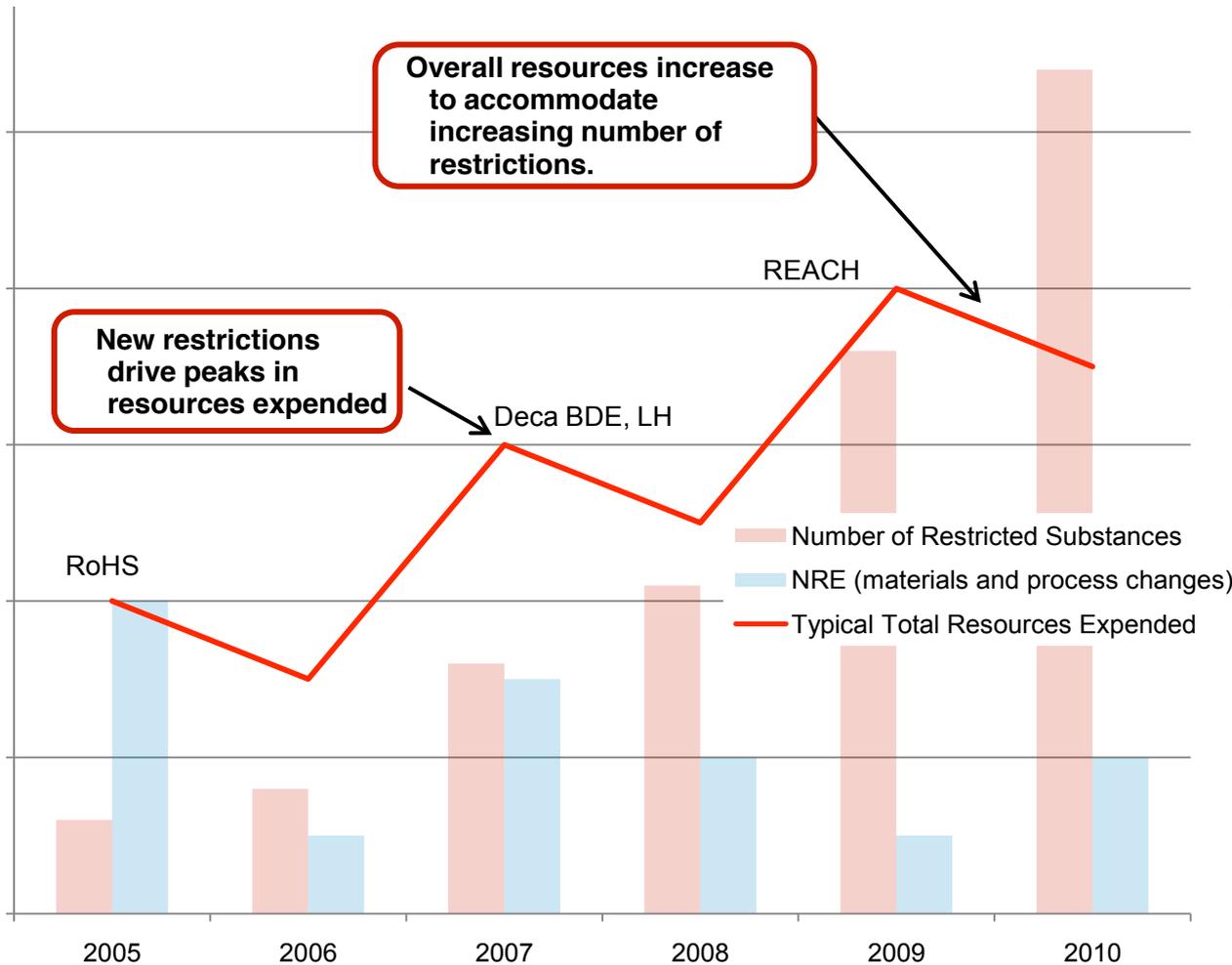
JIG (Joint Industry Guide)

- Guideline for reportable and restricted substances, but some OEM customers simply restrict the entire list

.... with new restrictions launched every month, requiring constant scrutiny of supplier material data

* JAMP – Joint Article Management Promotion-consortium

Resources required to gather data to meet new substance restrictions typically follow a 'sawtooth' line, and increase over time



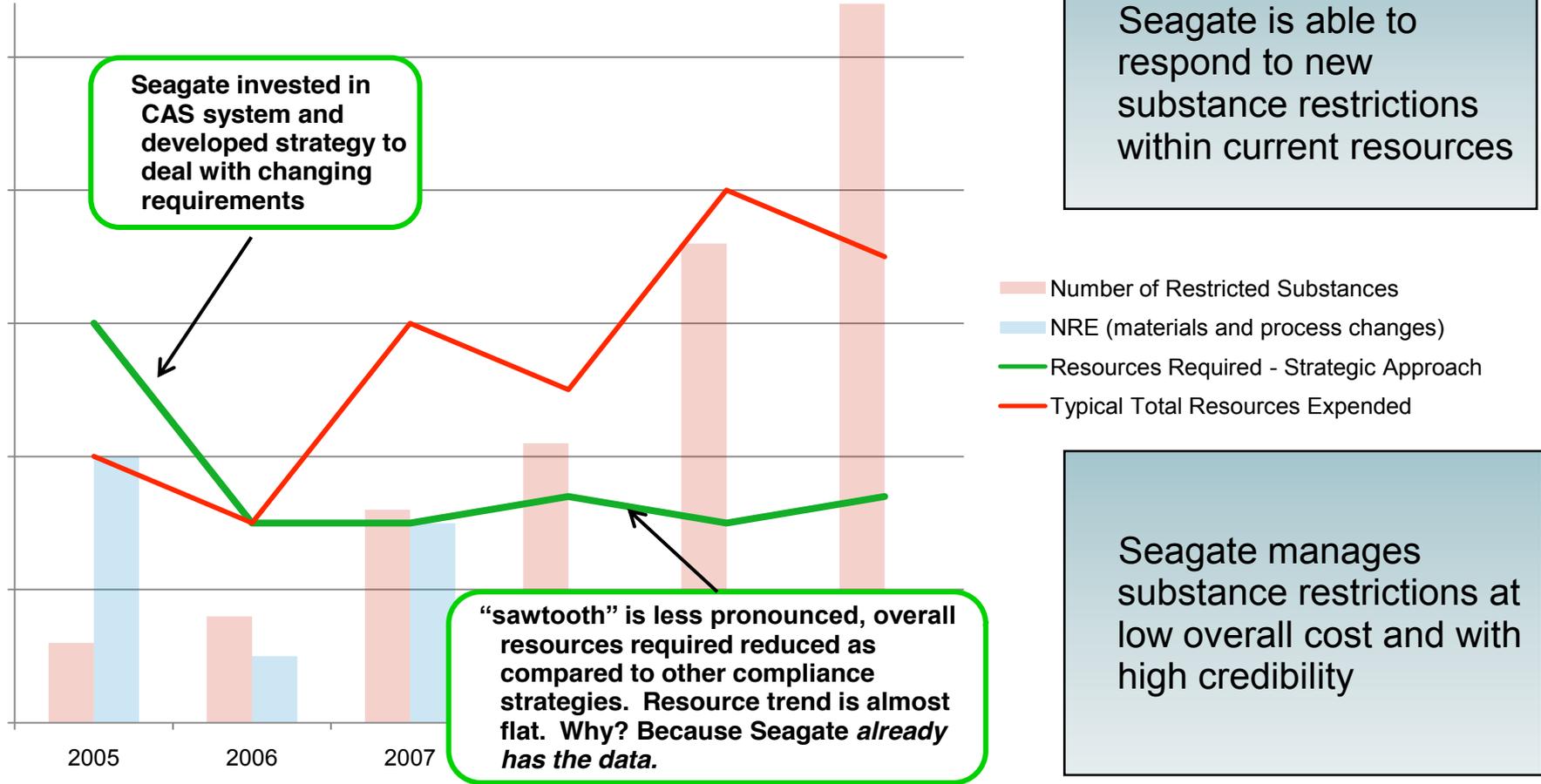
Emerging new restrictions result in spikes of NRE, business process change, and resource requirements

Non-regulatory restrictions, like low halogen, add even more requirements

Challenge: Produce environmentally friendly products that meet all regulatory and customer requirements while controlling overall cost of compliance.



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



Seagate's blueprint for product materials compliance is based on these cornerstones

Executive Support

- Seagate executives support our environmental efforts, and reinforce requirements to suppliers

Detailed Specifications and Procedures

Leverage Standards

- Seagate uses the IPC 1752 materials reporting standard*

Tools and Automation

- Seagate uses standard software tools, and we openly share most of our methods

Supplier Responsibility

- Suppliers are entirely responsible for providing complete data to Seagate
- A third party service is used at supplier expense to review and verify data submitted by suppliers

Full Disclosure

- Gather all the data needed to respond to changing requirements
- Reduce overall supply chain costs with proactive approach

**IPC 1752 is an industry standard materials reporting format available at ipc.org*

As new substance requirements emerge, Seagate is positioned to respond

Seagate

Strategy

- Compliance, low-cost, and flexibility
- Require full materials disclosure – suppliers are held responsible
- Automated information management – Seagate is a leading implementer of our software tool, so we have a voice in future software enhancements

Suppliers

Full Disclosure

- IPC 1752 is an accepted, open standard
- Compliance with changing requirements without new/additional documentation
- Eliminates misinterpretation of restrictions
- Suppliers must use third party service to review data

Lab Reports

- RoHS and Low Halogen
- 12-monthly renewal (OEM requirement)

3rd Party

Strategy

- Model established to improve data quality and reduce overall costs
- Suppliers are responsible for data, supporting lab reports, and third party data review and processing

Results

- Significantly improvement in supplier responsiveness and time-to-compliance
- Has reduced failures and processing time
- Reduced engineering effort



Thank You

