Joshua Grice

Research Analyst

Reducing Toxic Threats

Washington State
Department of Ecology

(360) 407-6786

joshua.grice@ecy.wa.gov

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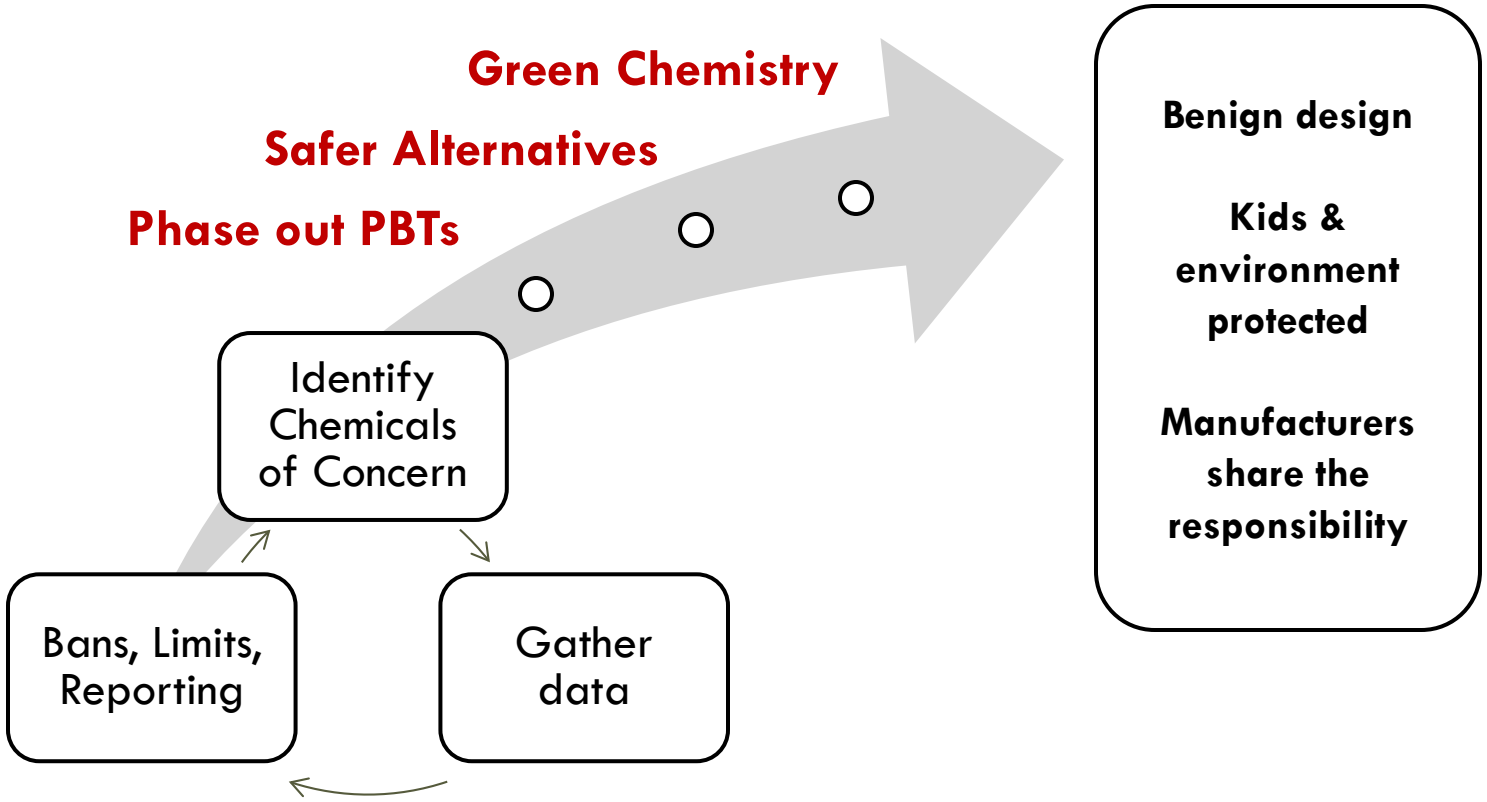
CHEMICALS IN PRODUCTS

ECOLOGY'S DATA AND POLICY EFFORTS

January 2014

Prevention

Averting toxic exposures and avoiding future costs is the smartest, cheapest and healthiest approach.



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Ecology's Efforts

>>>BANS

- PBDEs, including deca-BDE in certain products
- Bisphenol A in children's bottles/cups, sports bottles
- Copper in brake pads, boat paint
- Toxics in packaging
- Lead in wheel weights
- Coal tar sealants

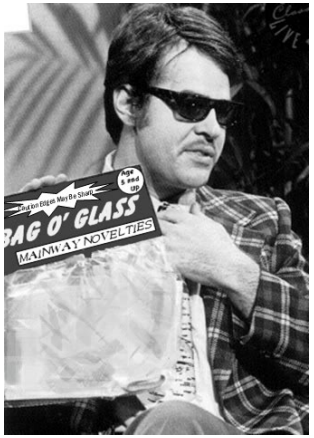
>>> DATA COLLECTION

- Children's Safe Product Act reporting rule
- Product testing
- Brake pad law

>>> STAKEHOLDER PROCESSES

- Chemical Action Plans for Persistent, Bioaccumulative Toxics (PBTs)
- Alternatives assessment guidance
- Green Chemistry Center

Children's Safe Products Act



- Passed in 2008
- Established limits for lead, cadmium and phthalates in children's products
  - Substantially preempted by CPSIA
- Requires reporting on Chemicals of High Concern to Children (CHCCs) in children's products
- Law: RCW 70.240

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CSPA- Reporting Rule

- Adopted August 2011
- Addresses reporting on Chemicals of High Concern to Children (CHCCs) in children's products
- CHCC list contains 66 chemicals or chemical groups
- CHCC list amended in 2013 to remove n-butanol and add TDCPP [Tris(1,3-dichloro-2propyl) phosphate]
  - Begin reporting TDCPP in February, 2015
- Rule: WAC 173-334

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Children's Safe Product Act

Definition of "children's product"

- Toys
- Children's Cosmetics
- Children's Jewelry
- Children's Clothing
- Child car seats
- Products intended to help a child with sucking or teething, to facilitate sleep, relaxation, or the feeding of a child

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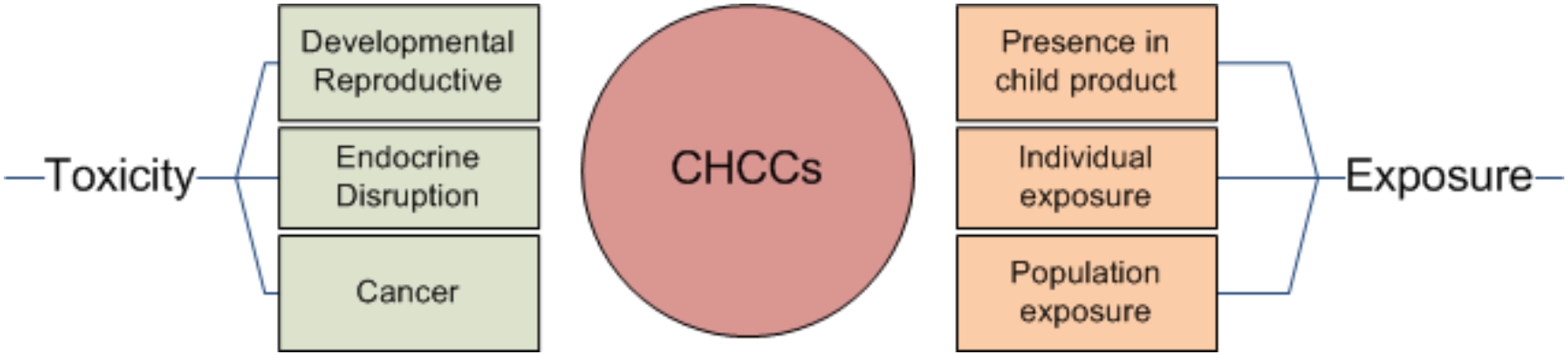
Development of the CHCC list



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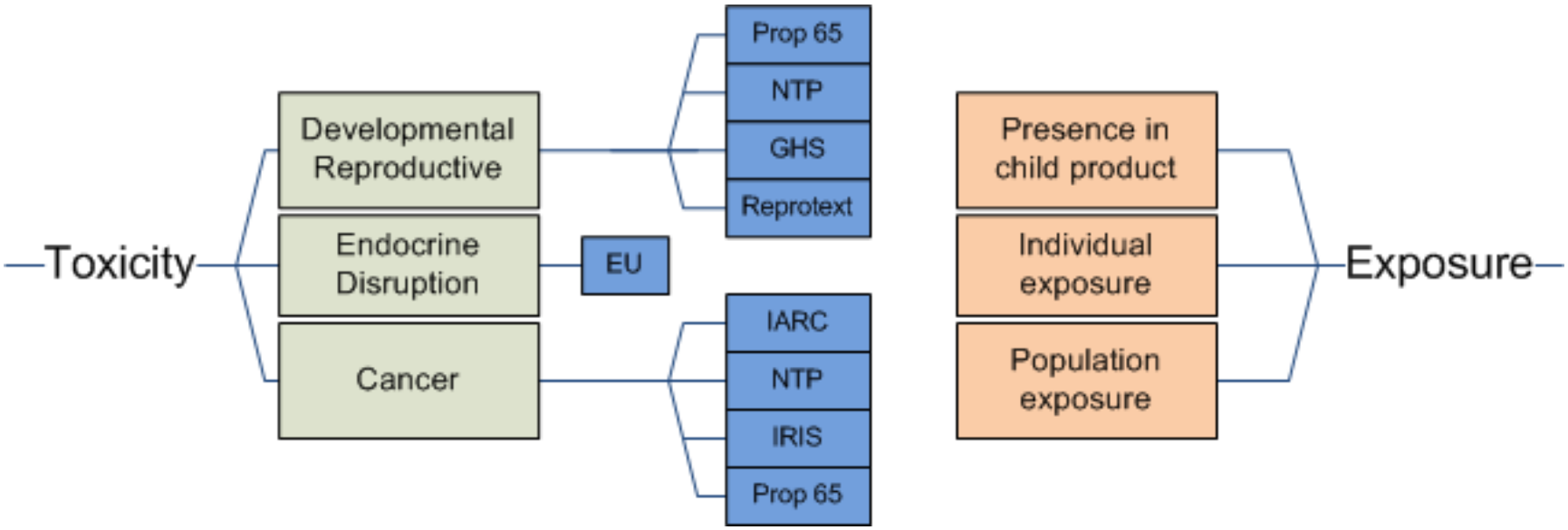
Development of the CHCC list



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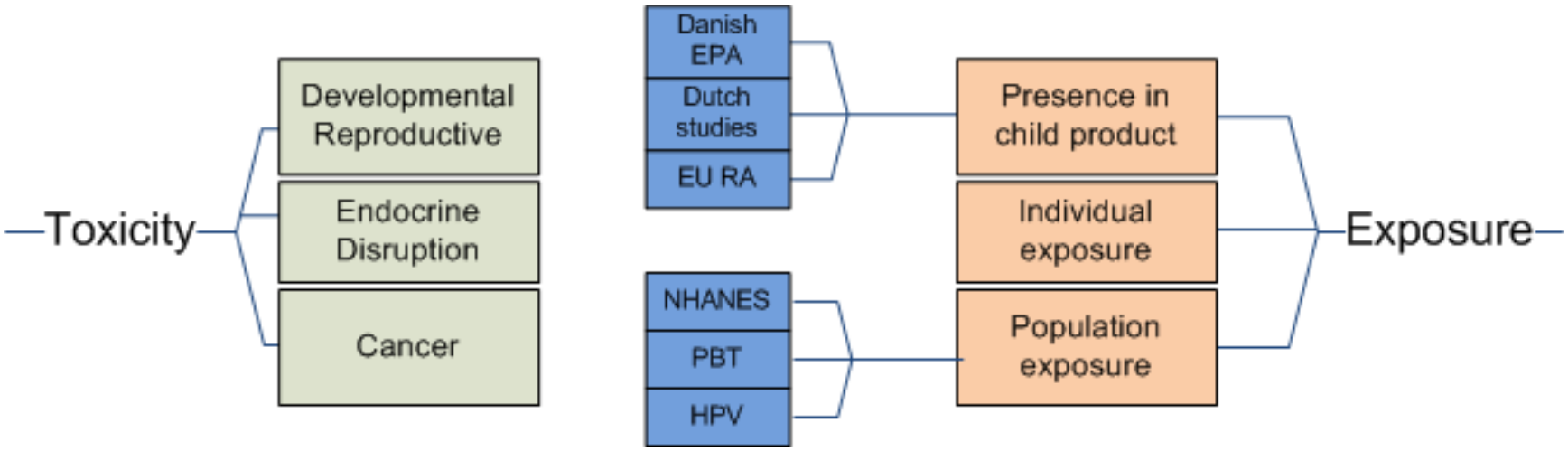
Development of the CHCC list



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CSPA – phased-in reporting

Manufacturer Categories (US Aggregate Gross Sales)	**Product Tier 1** •Intended to be put in mouth •Intended for on skin •Mouthable & for under 3	**Product Tier 2** •Intended for prolonged skin contact (>1hr) •Clothing, jewelry	**Product Tier 3** •Intended for short skin contact (<1 hr) •Toys
Largest ($1 billion+)	**August 2012**	**February 2013**	**August 2013**
Larger ($250 million-$1 billion)	**February 2013**	**August 2013**	August 2014
Medium ($100 million-$250 million)	**August 2013**	August 2014	August 2015
Small ($5 million - $100 million)	August 2014	August 2015	August 2016
Smaller ($100,000-$5 million)	August 2015	August 2016	August 2017
Tiny (>$100,000)	August 2016	August 2017	August 2018

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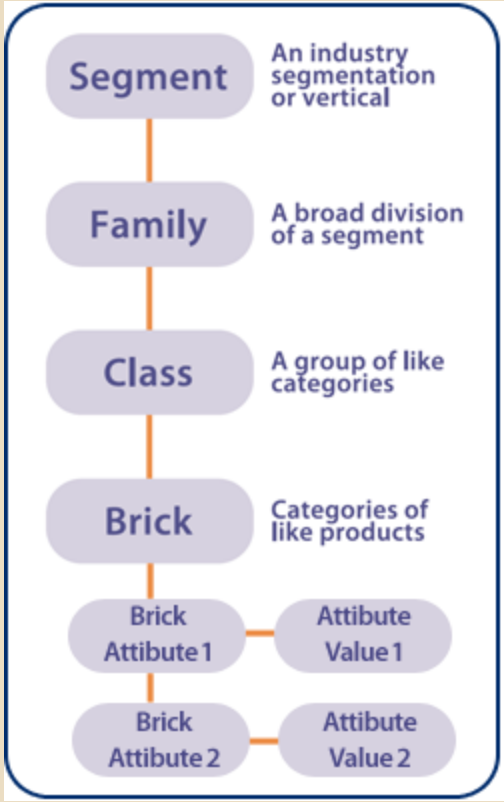
CSPA – reporting framework

Manufacturers report presence of CHCCs by product category and product component.



Segment	Example bricks
Arts/crafts/needlework	Artists paints/dyes, Artists pastels/crayons, Jewelry craft materials, Sand art supplies
Baby care	Pacifiers/teething rings, Baby bath safety products, Baby changing mats, Baby furniture/transportation/safety
Beauty/personal care	Cosmetic aids/accessories, Fragrances, Hair-shampoo, Dental cleansing, Lip Balms
Clothing	Handwear, Headwear, Skirts, Socks, Trousers/Shorts, Sleepwear Variety Packs
Footwear	Athletic footwear, Boots, Shoes
Household	Cushions, Bed sheets/valances, Pillow cases
Personal accessories	Anklets, Earrings, Necklaces, Rings, Tiaras
Toys/games	Board games, Practical jokes, Puppets, Developmental/educational toys, Outdoor games, Toy vehicles, Role play – kitchen toys

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CSPA – reporting framework

Manufacturers report presence of CHCCs by product category and product component.

- Bio-based Materials (Animal or Plant based) ex. leather, horn, silk, wool
- Glass, Ceramic and Siliceous material
- Homogenous Mixtures (gels, creams, powders, liquids, adhesives, synthetic fragrances)
- Inks/Dyes/Pigments
- Metals (Including alloys)
- Surface coatings (paints, plating, waterproofing etc.)
- Synthetic Polymers (synthetic rubber, plastics, foams etc.)
- Textiles (synthetic fibers and blends)
- Other

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CSPA – required information

Manufacturers must report the function of the CHCC and in what amount it is present.

Accelerator	Dispersant	Manufacturing additive	Solvent
Adhesive	Emulsifier	Mold/press release	Source contaminant
Antioxidant	Flame retardant	No function – contaminant	Stabilizer
Antistatic agent	Flavoring	pH adjustment	Stain prevention
Binding agent	Fragrance	Physical characteristics	Surfactant
Catalyst	Germicidal	Plasticizer/softener	Texture
Coloration/Pigments/ Dyes/Inks	Hardening	Preservative	UV stabilizer/ absorber
Component of plastic resin or polymer process	Inactive ingredient	Protective coating	Water proofing
Conductive material	Lubricant	Reinforcement/strength	

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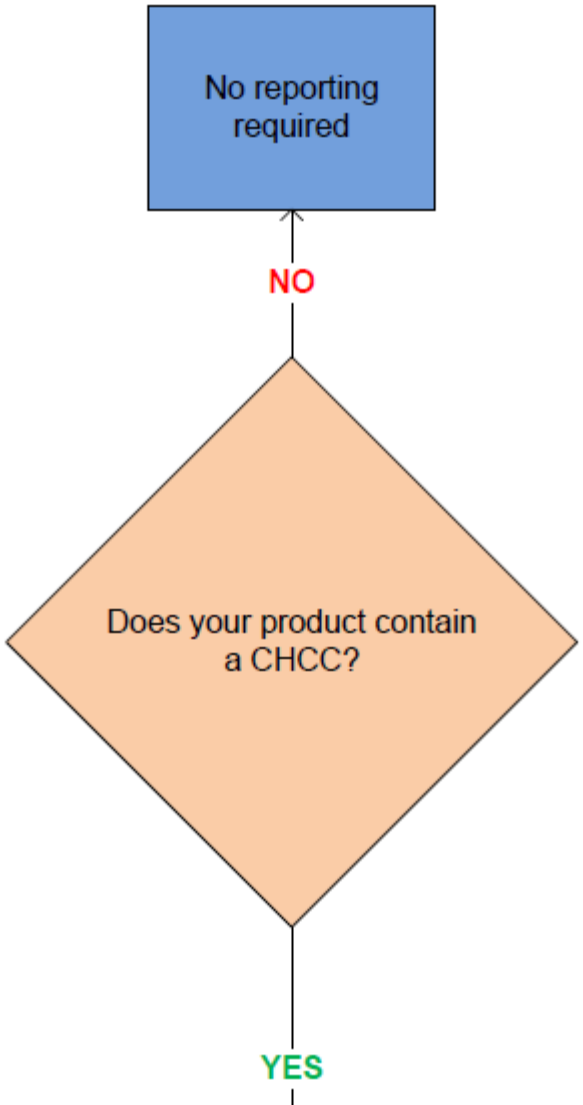
CSPA – required information

Manufacturers must report the function of the CHCC and in what amount it is present.

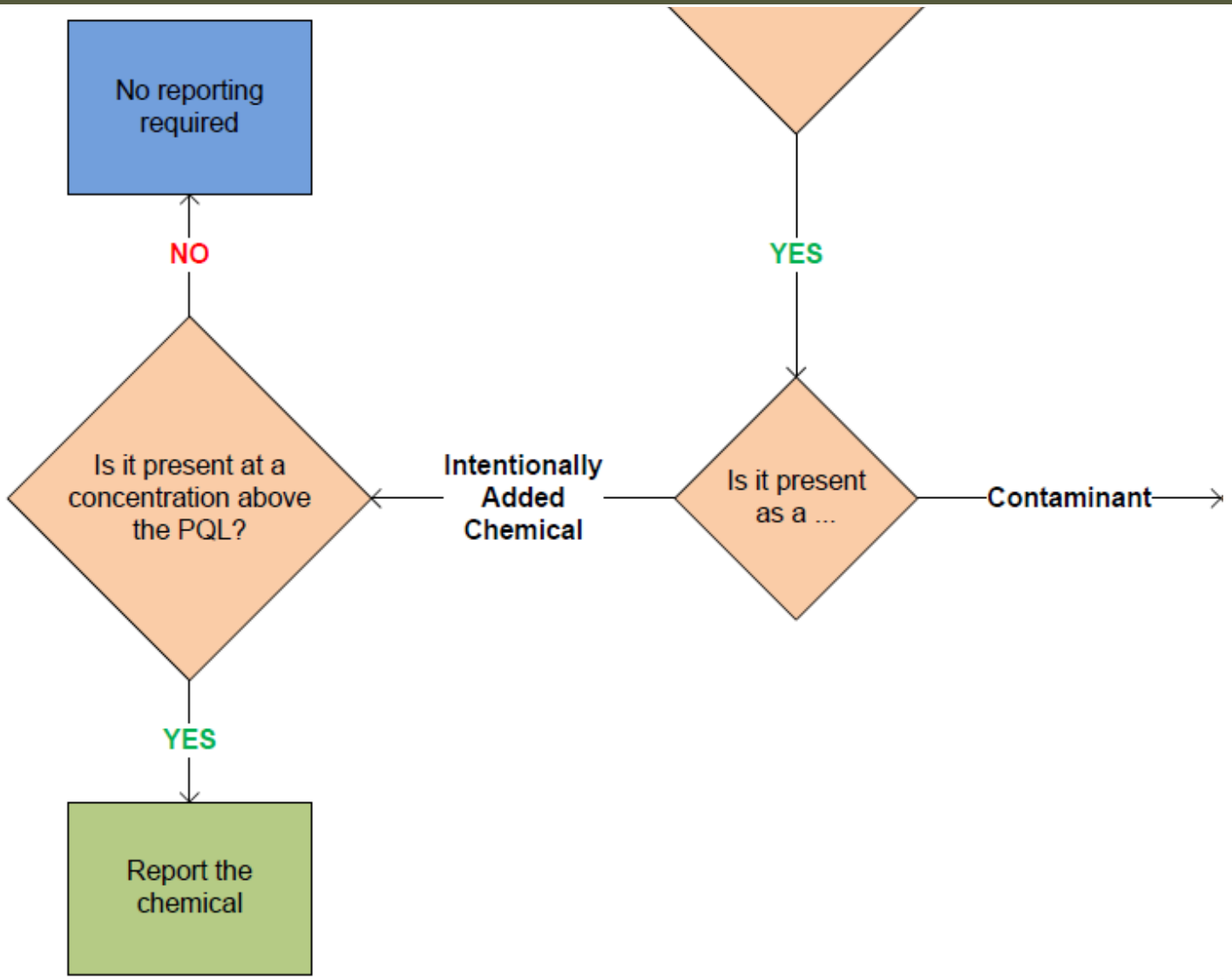
Reporting Ranges

- **Range 1:** < 100 ppm and >= PQL
- **Range 2:** < 500 ppm and >= 100 ppm
- **Range 3:** < 1000 ppm and >= 500 ppm
- **Range 4:** < 5000 ppm and >= 1000 ppm
- **Range 5:** < 10,000 ppm and >= 5000 ppm
- **Range 6:** >= 10000 ppm

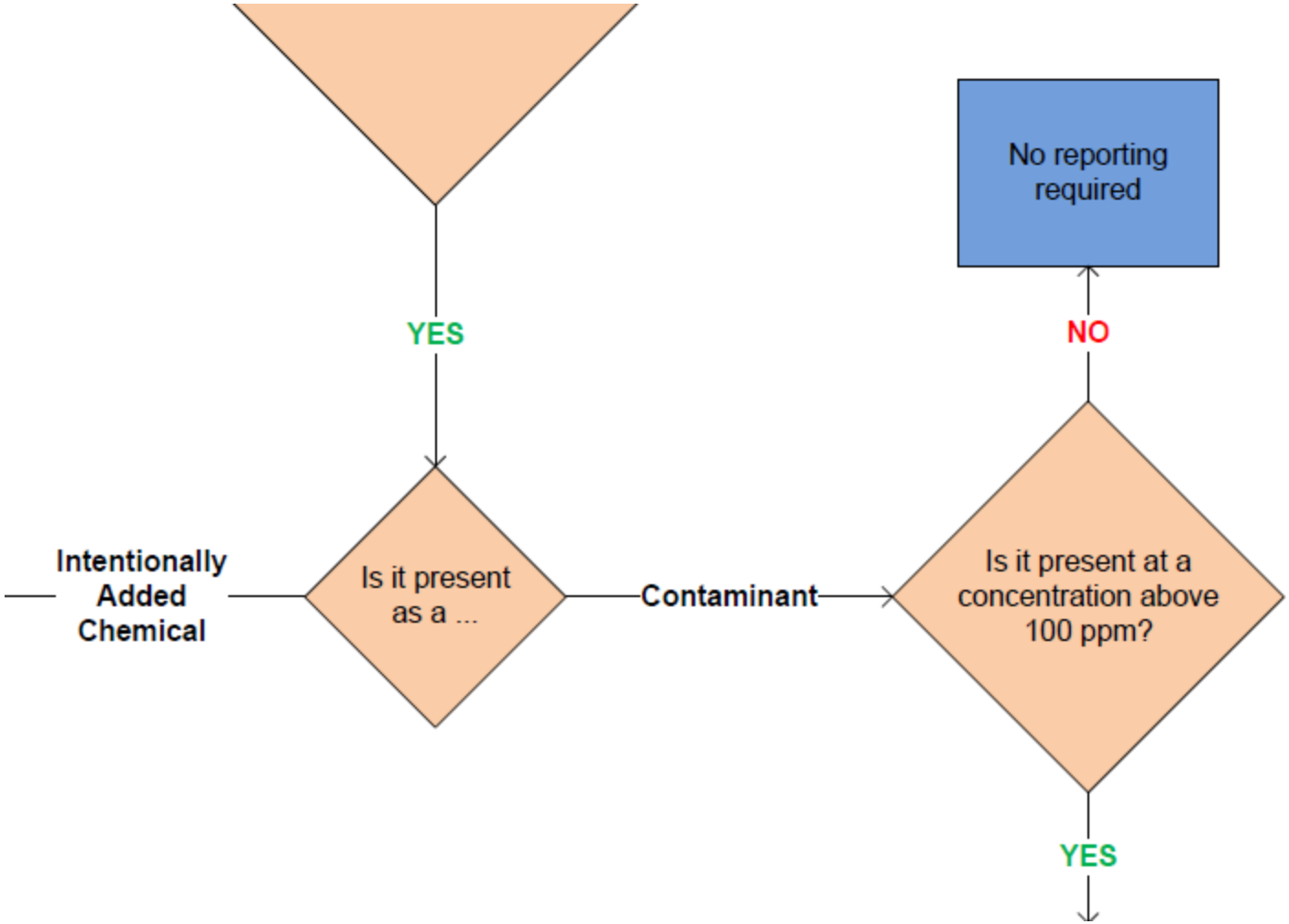
CSPA – contaminants



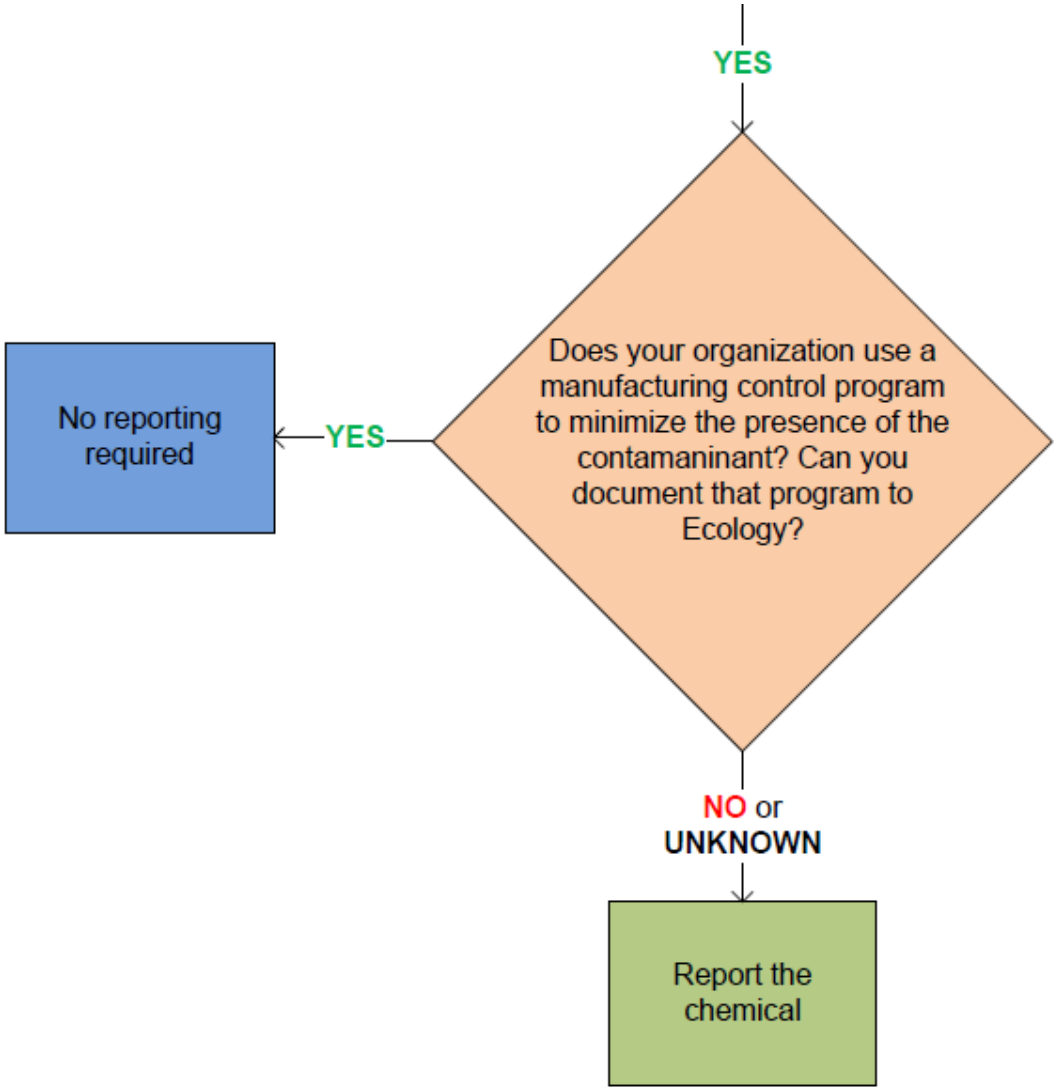
CSPA – contaminants



CSPA – contaminants



CSPA – contaminants



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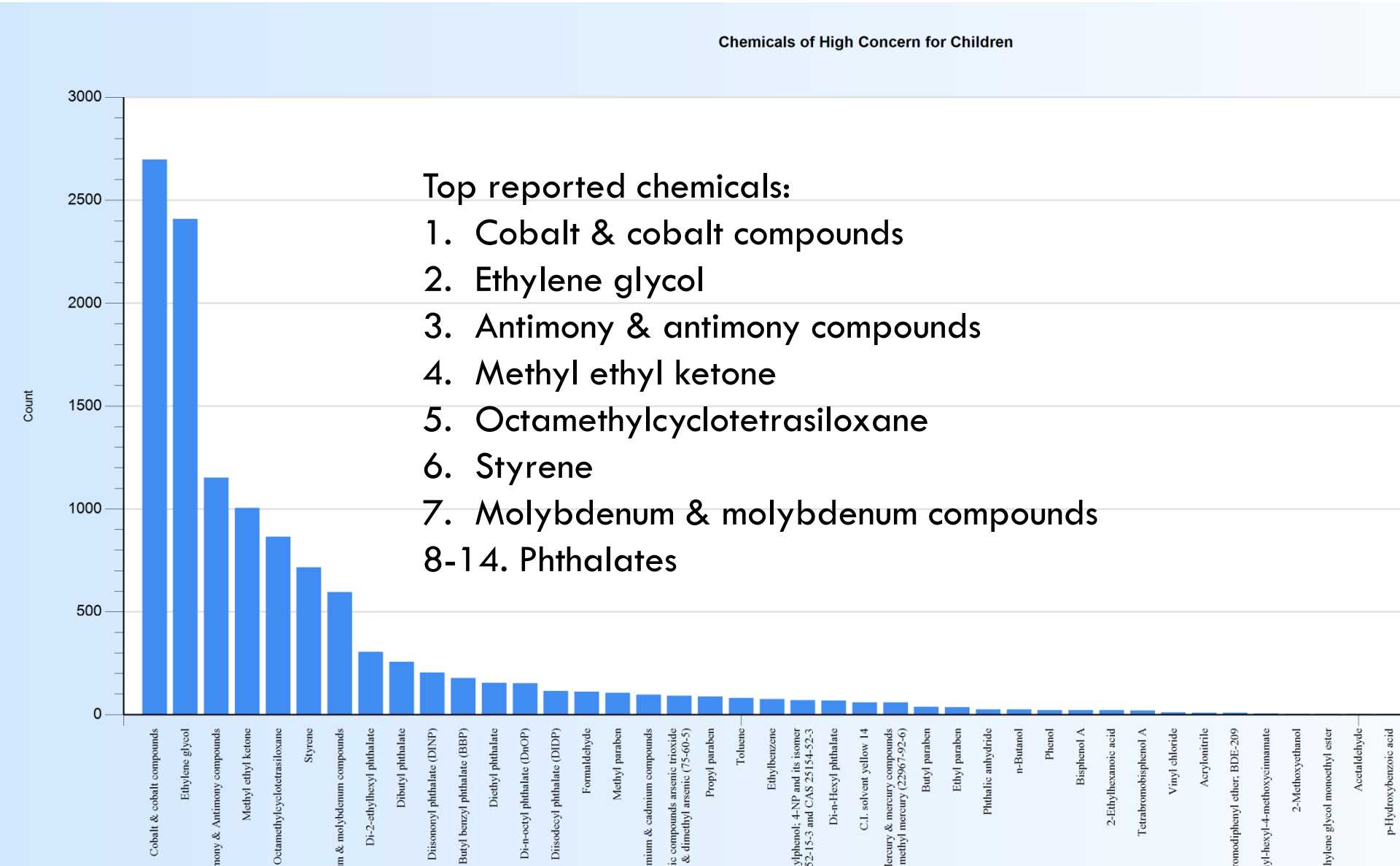
Reports per chemical



Top reported chemicals:

1. Cobalt & cobalt compounds
2. Ethylene glycol
3. Antimony & antimony compounds
4. Methyl ethyl ketone
5. Octamethylcyclotetrasiloxane
6. Styrene
7. Molybdenum & molybdenum compounds

8-14. Phthalates

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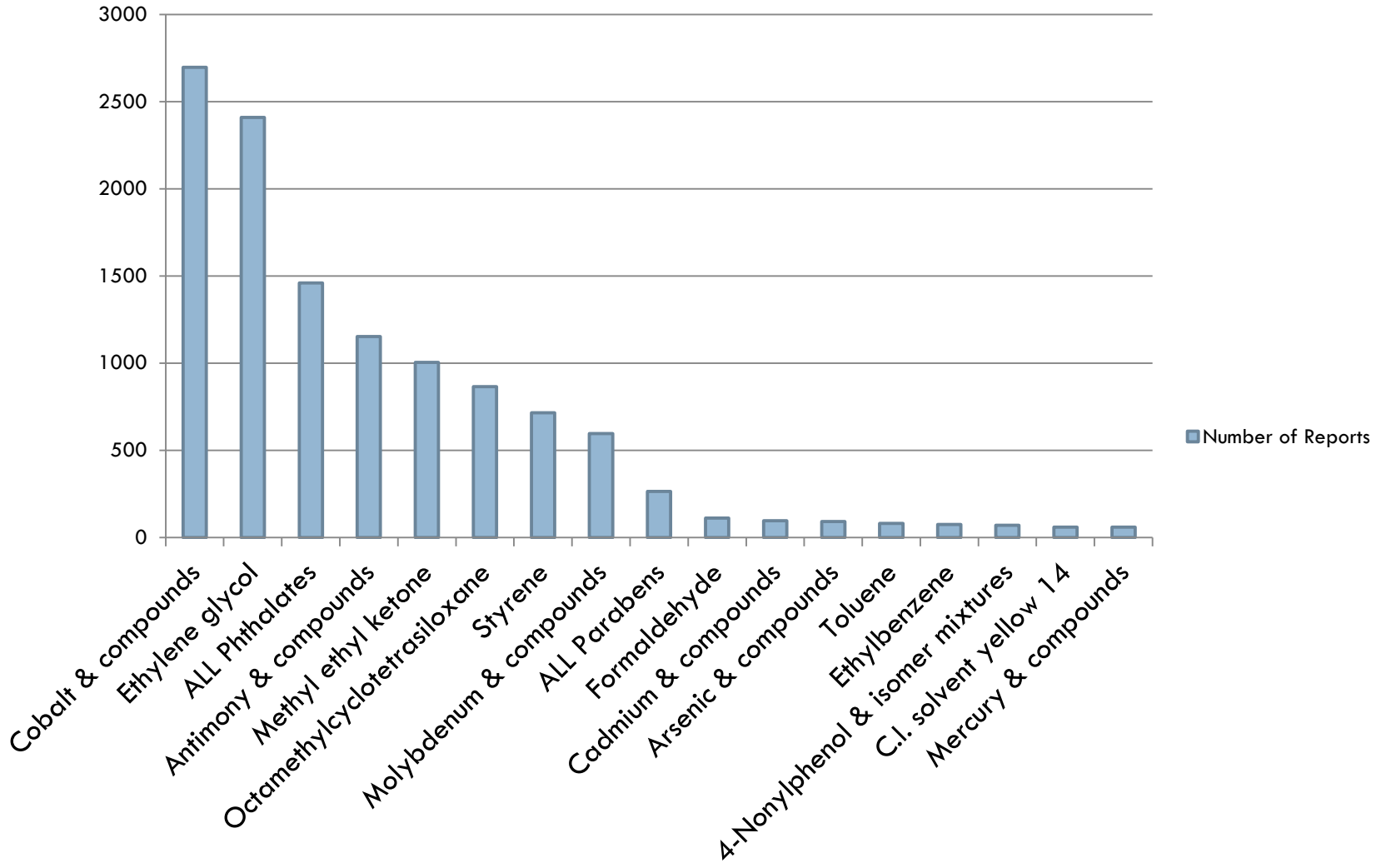
Reports per chemical



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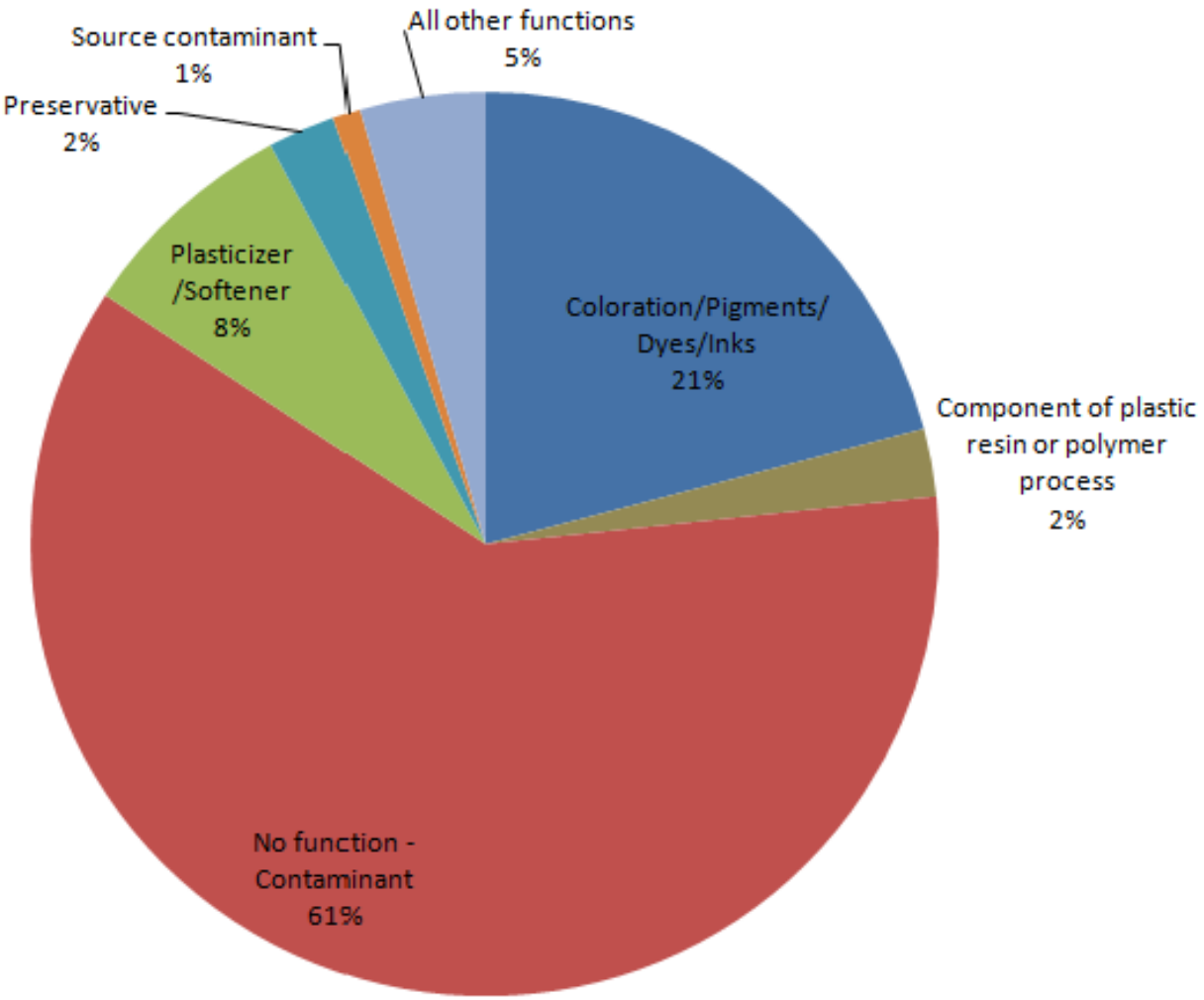
Reports per function



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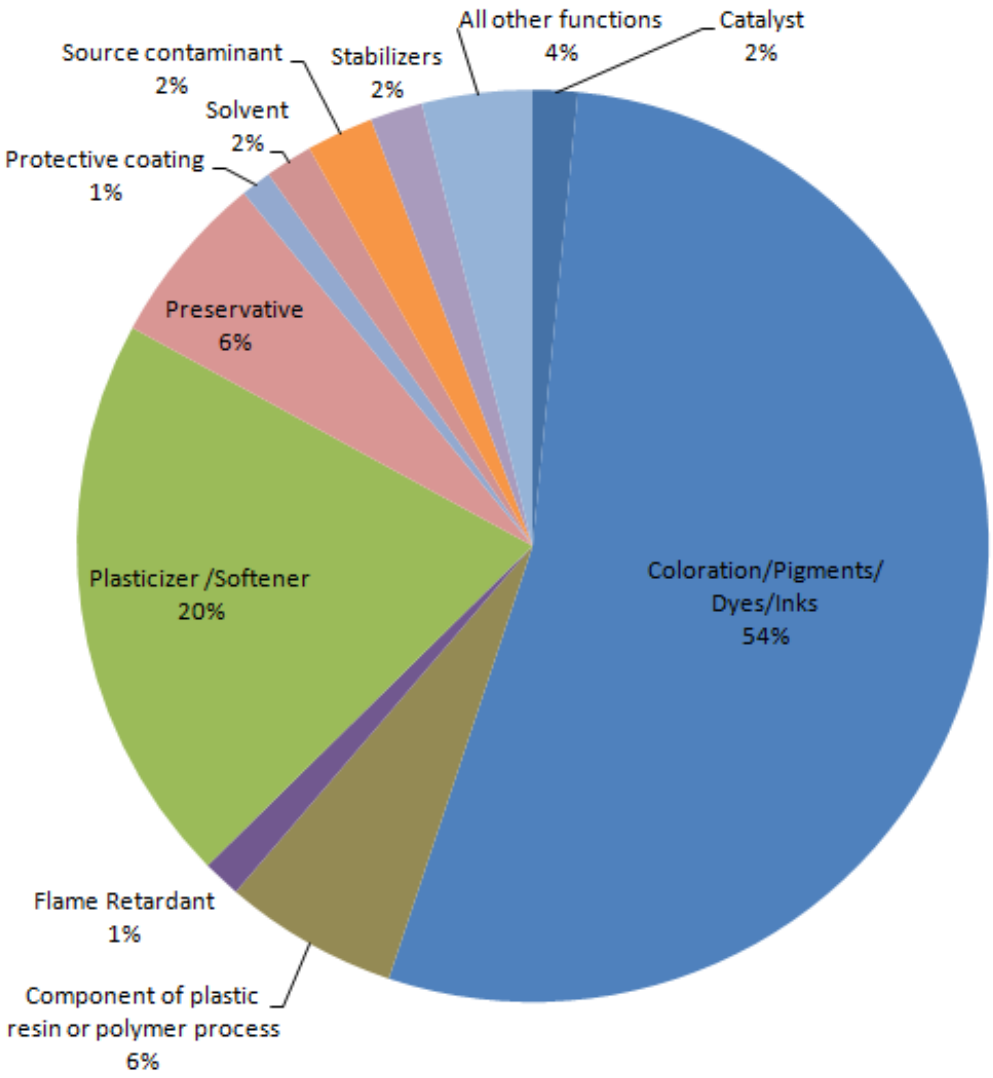
Reports per function minus contaminants



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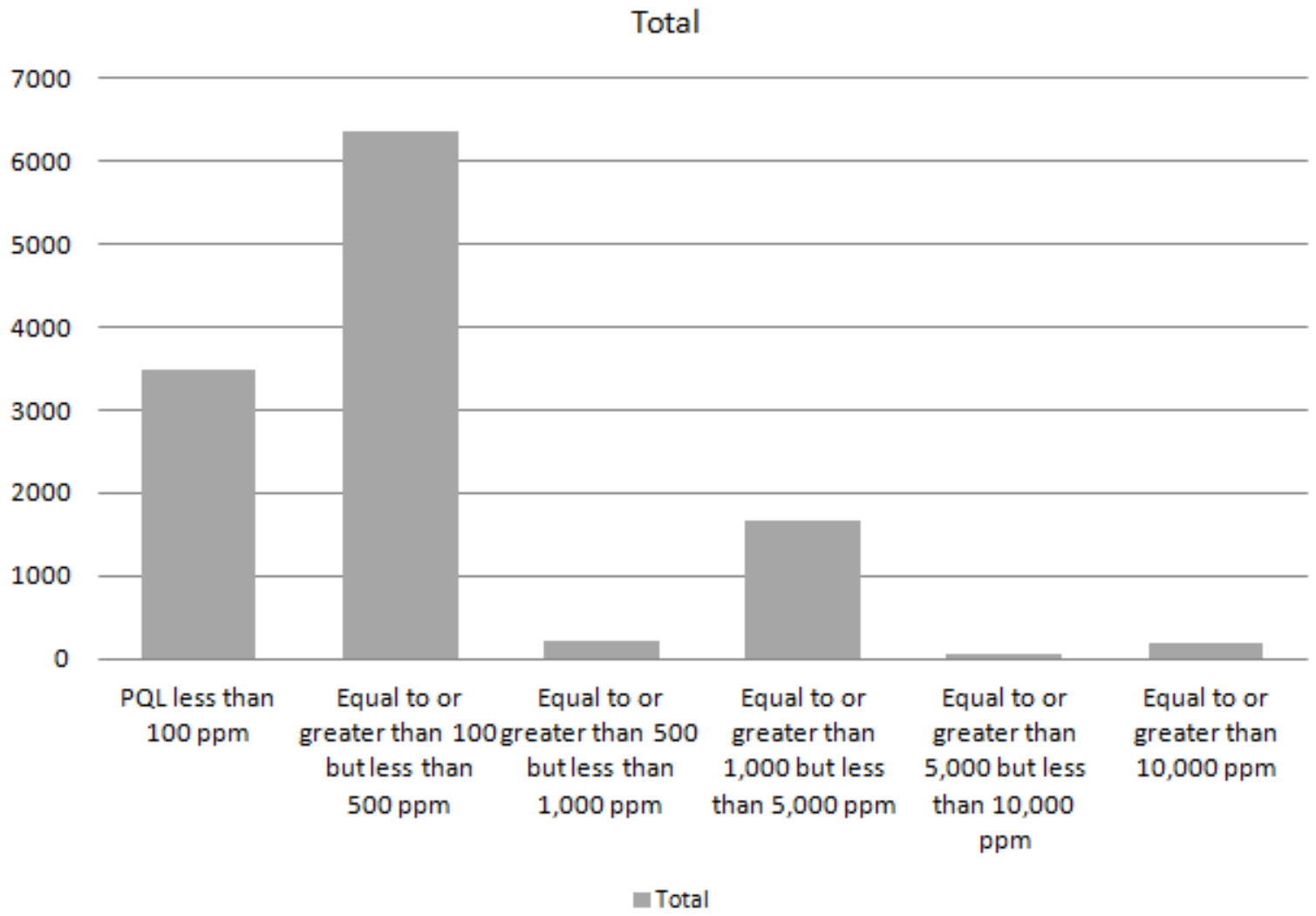
Reports per concentration category



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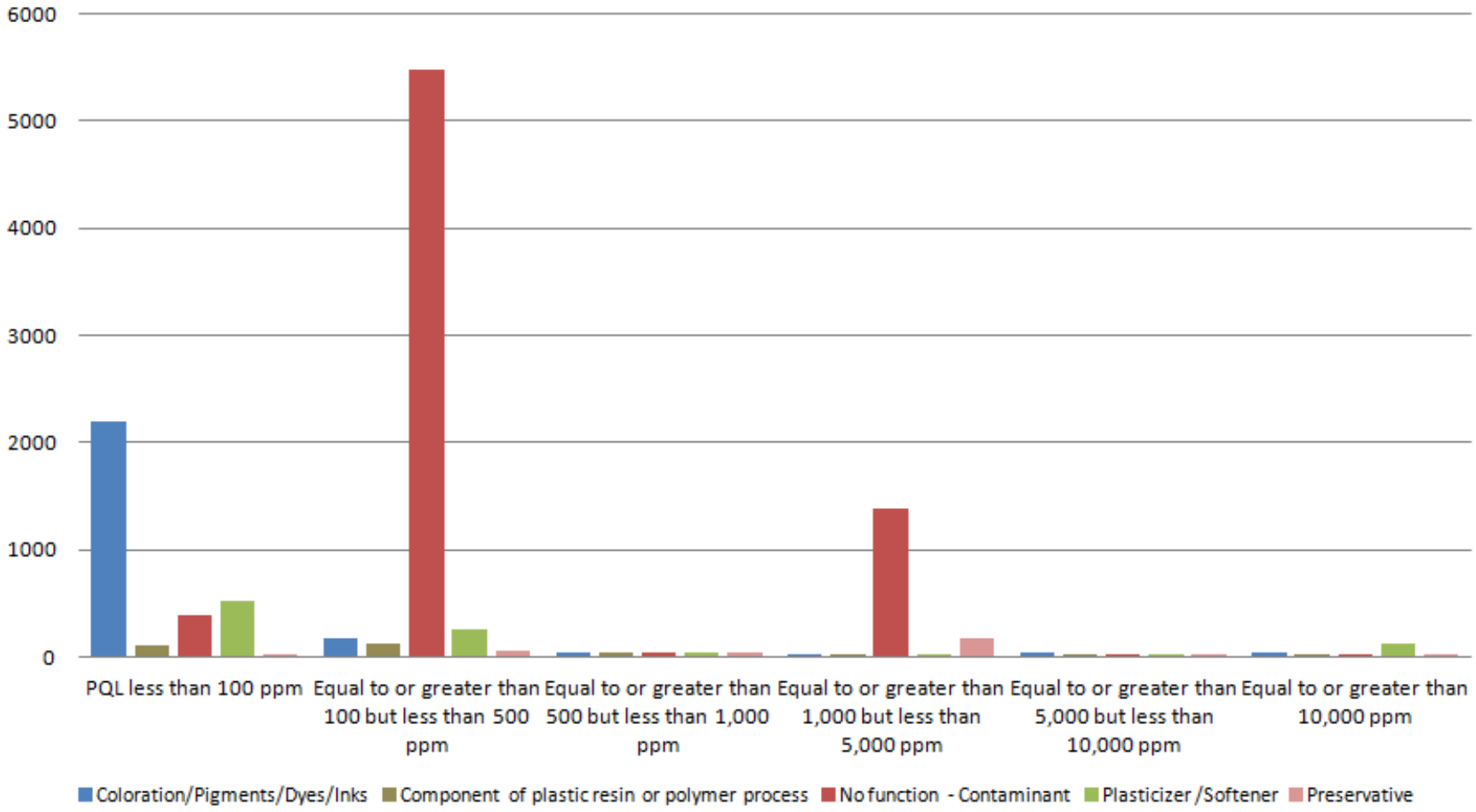
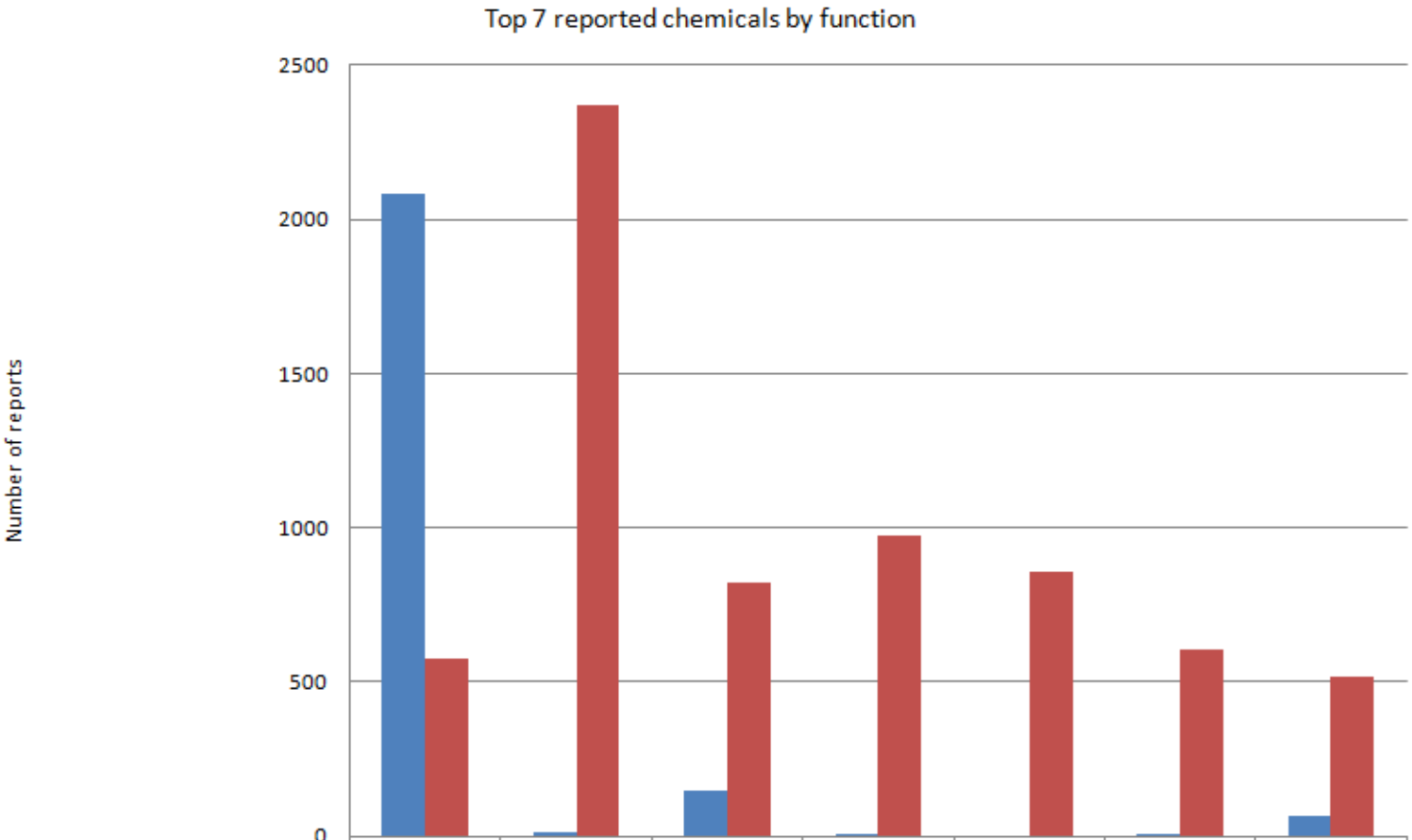
Reports per concentration category by function



Commonly reported chemicals by top functions



	Cobalt & cobalt compounds	Ethylene glycol	Antimony & Antimony compounds	Methyl ethyl ketone	Octamethylcyclotetrasiloxane	Styrene	Molybdenum & molybdenum compounds
Coloration/Pigments/Dyes/Inks	2086	14	149	2		4	67
No function - Contaminant	577	2371	822	975	859	607	515

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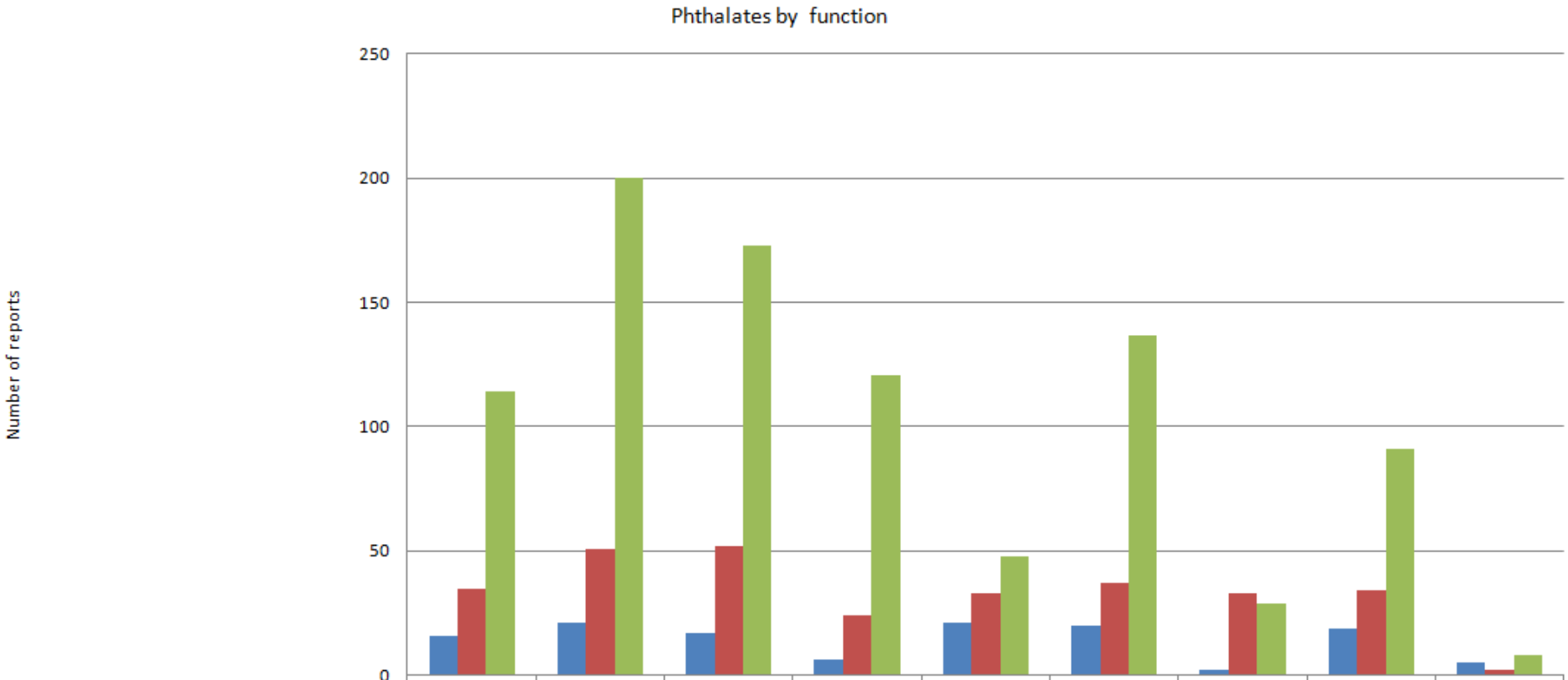
Phthalates by top functions



	Butyl benzyl phthalate (BBP)	Di-2-ethylhexyl phthalate	Dibutyl phthalate	Diethyl phthalate	Diisodecyl phthalate (DIDP)	Diisononyl phthalate (DINP)	Di-n-Hexyl phthalate	Di-n-octyl phthalate (DnOP)	Phthalic anhydride
Component of plastic resin or polymer process	16	21	17	6	21	20	2	19	5
No function - Contaminant	35	51	52	24	33	37	33	34	2
Plasticizer /Softener	114	200	173	121	48	137	29	91	8

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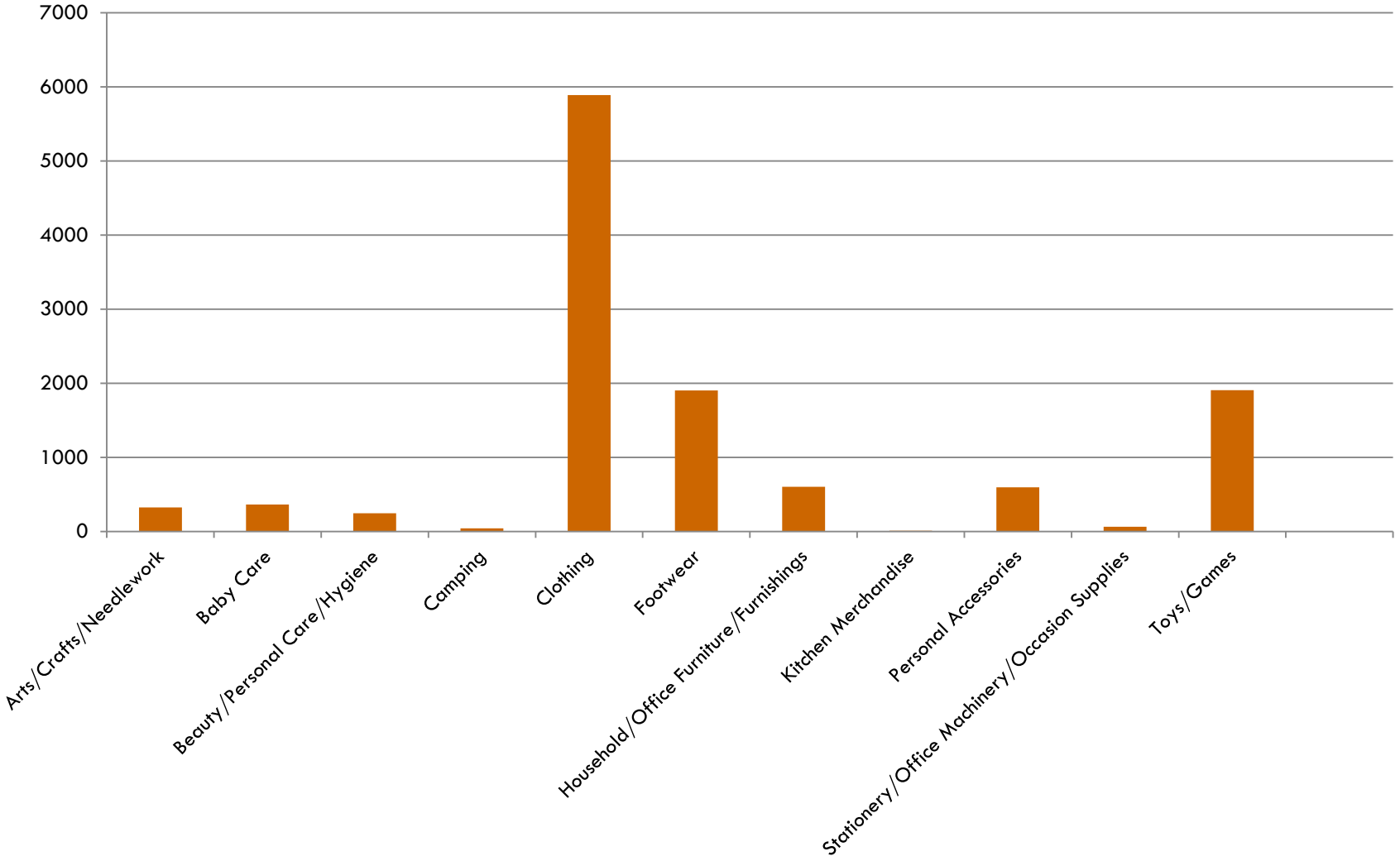
Reports per segment



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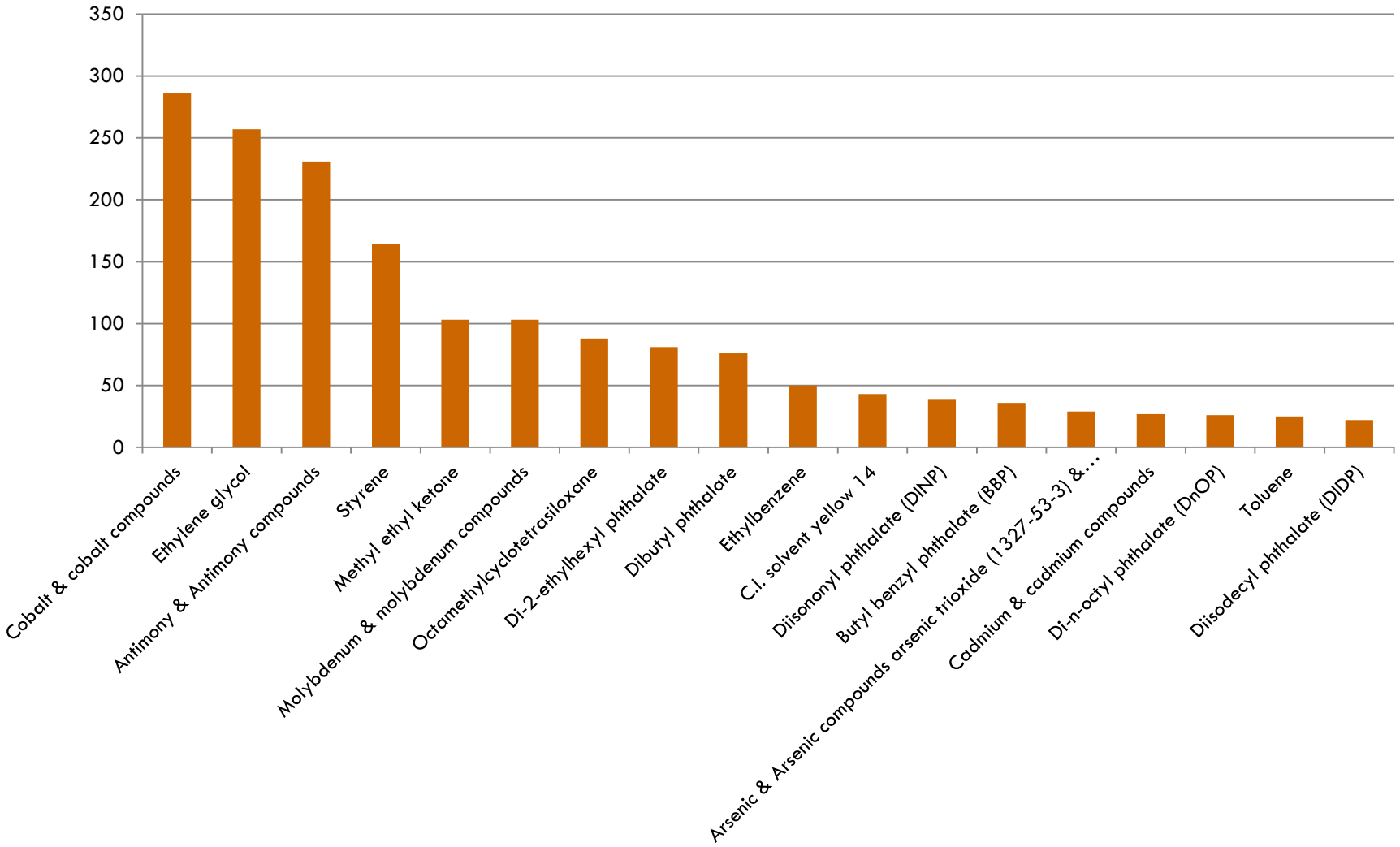
Reports – Toy Segment



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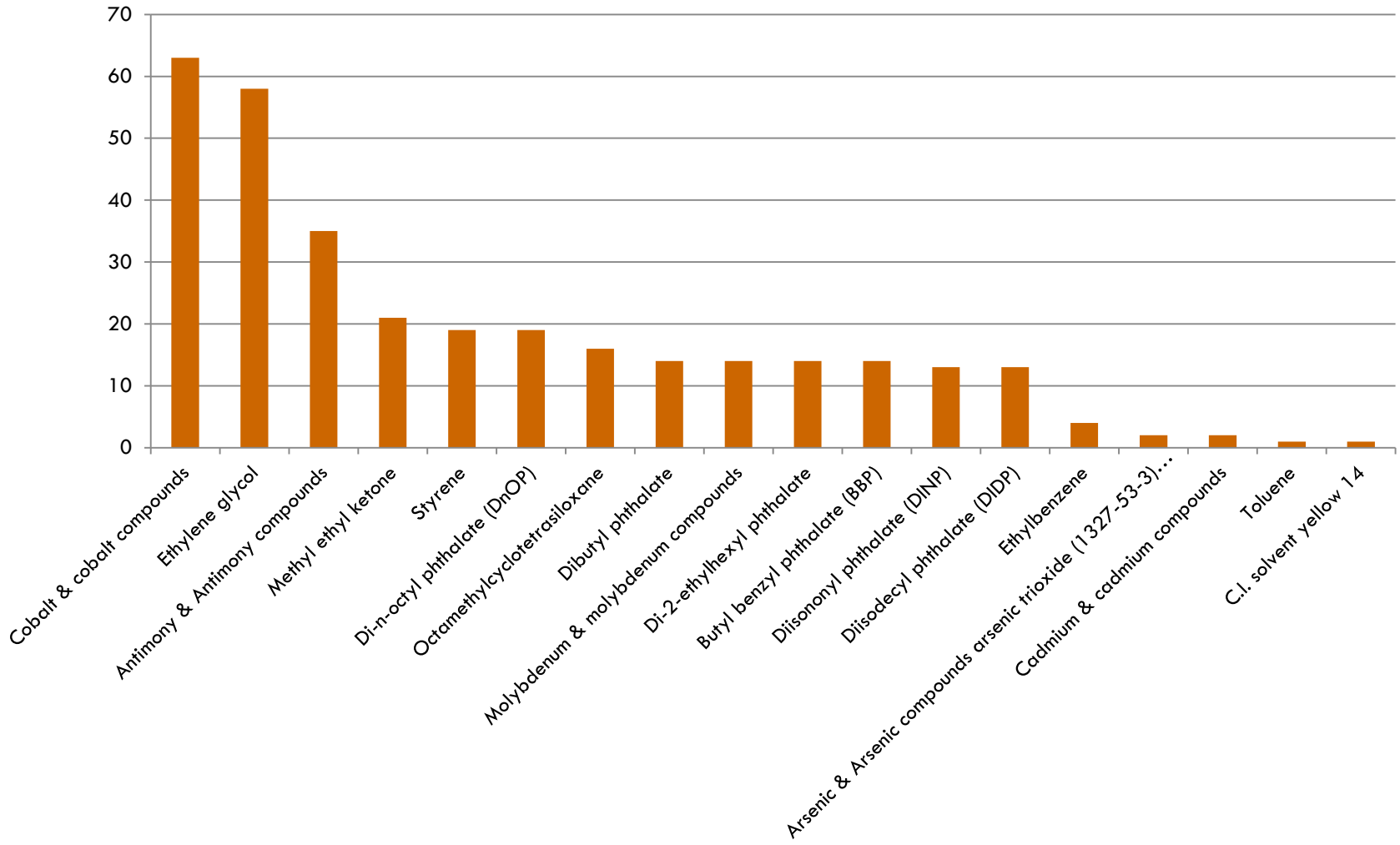
Reports – Baby Care Segment



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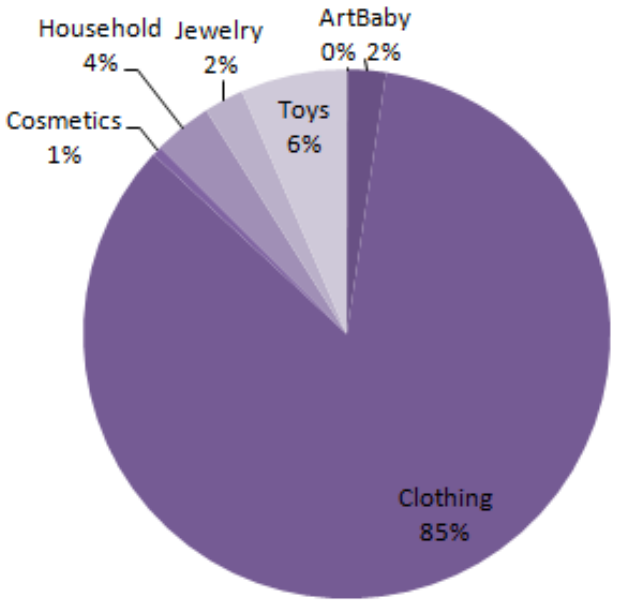
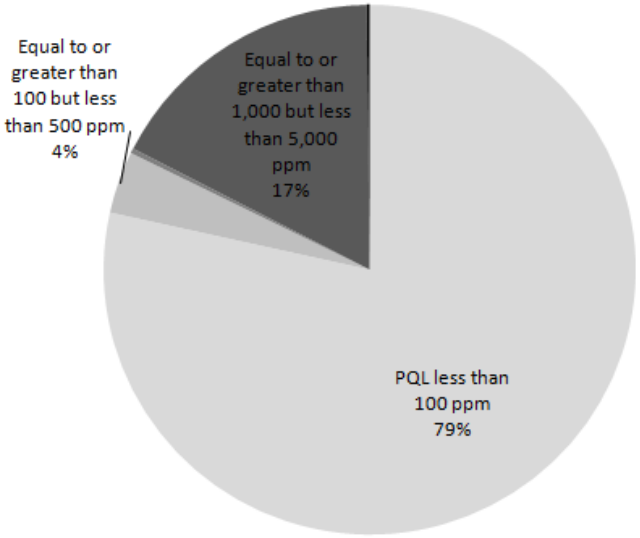
Cobalt

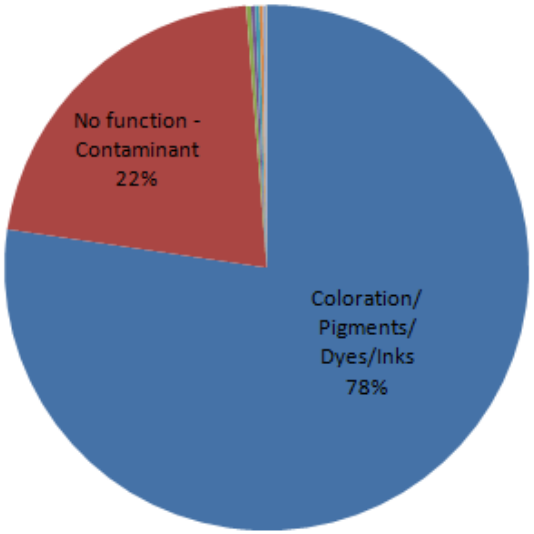
Cobalt - product types



Cobalt - concentrations



Cobalt - function



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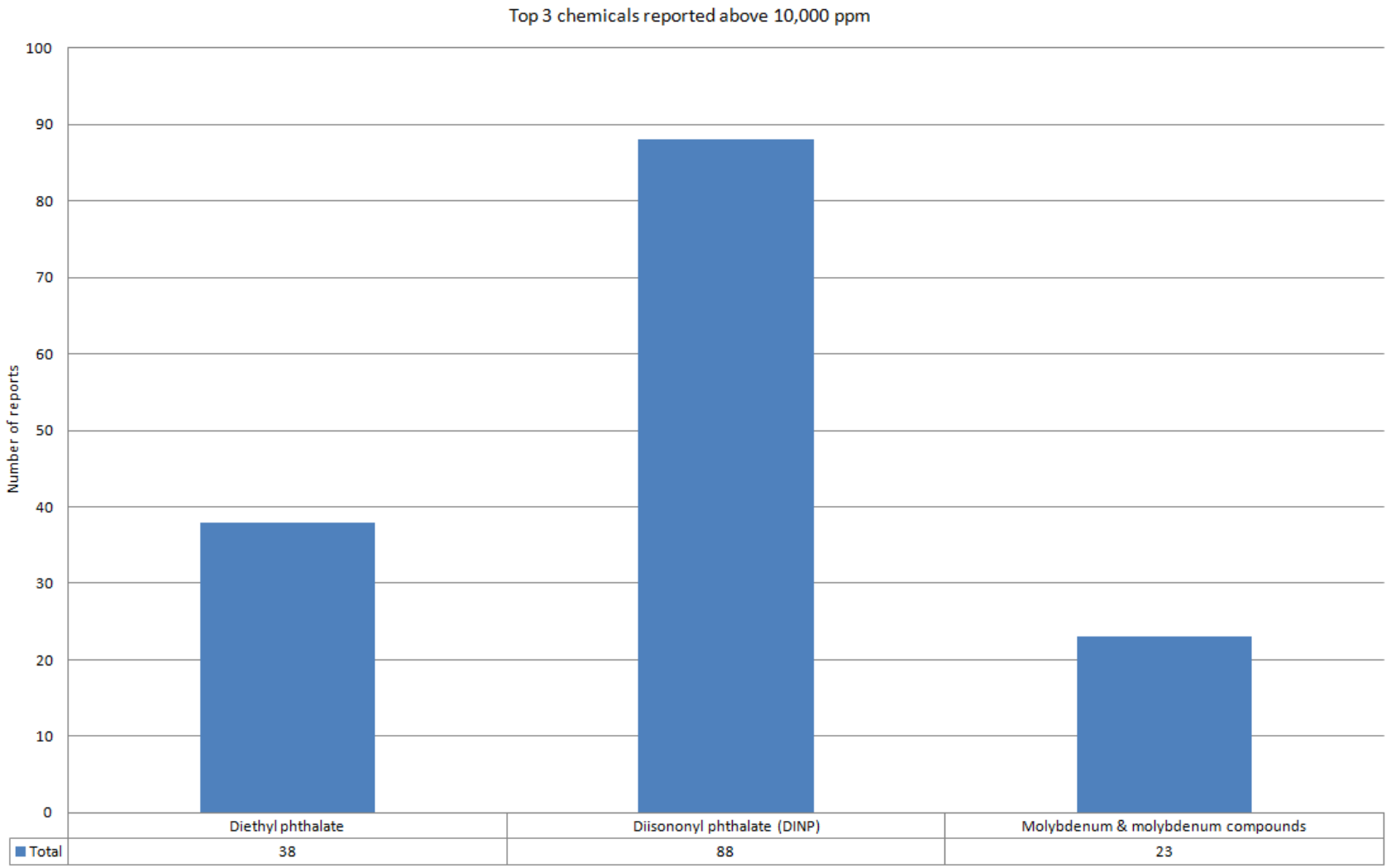
Top 3 chemicals reported at high levels



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Compliance Assurance

- Purchase and test products
- Compare our results to what has been reported
- Provide opportunity for the responsible party to explain any discrepancy
- No further action if the agency accepts the explanation
- Issue administrative penalty if the explanation in unacceptable including press release
- Appeal provisions available

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Product testing

Testing children's products to assure compliance with the Children's Safe Product Act Reporting Rule
(WAC 173-334; Ch. 70.240 RCW)

Lab budget	$168,000 (~600 samples) Grant funding from Attorney General settlement with Mattel
Target chemicals	Parabens, phthalates, metals, formaldehyde, volatile organic compounds
Target products	Children's cosmetic & personal care products, children's toys, children's jewelry, packaging from consumer and children's products
Final reports	January 2014

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Parabens

Parabens are the most widely used preservatives in cosmetic products. Various parabens and paraben mixtures are intentionally added to thousands of cosmetic products.

All five parabens on the list of Chemicals of High Concern to Children have been classified as Category 1 endocrine disruptors by the European Union.

Category	Number	Percent
Baby and bath accessories	16	37.2%
Cosmetics & fragrances	5	11.6%
Lip balm & gloss	13	30.2%
Halloween (makeup)	7	16.3%
Miscellaneous	2	4.7%

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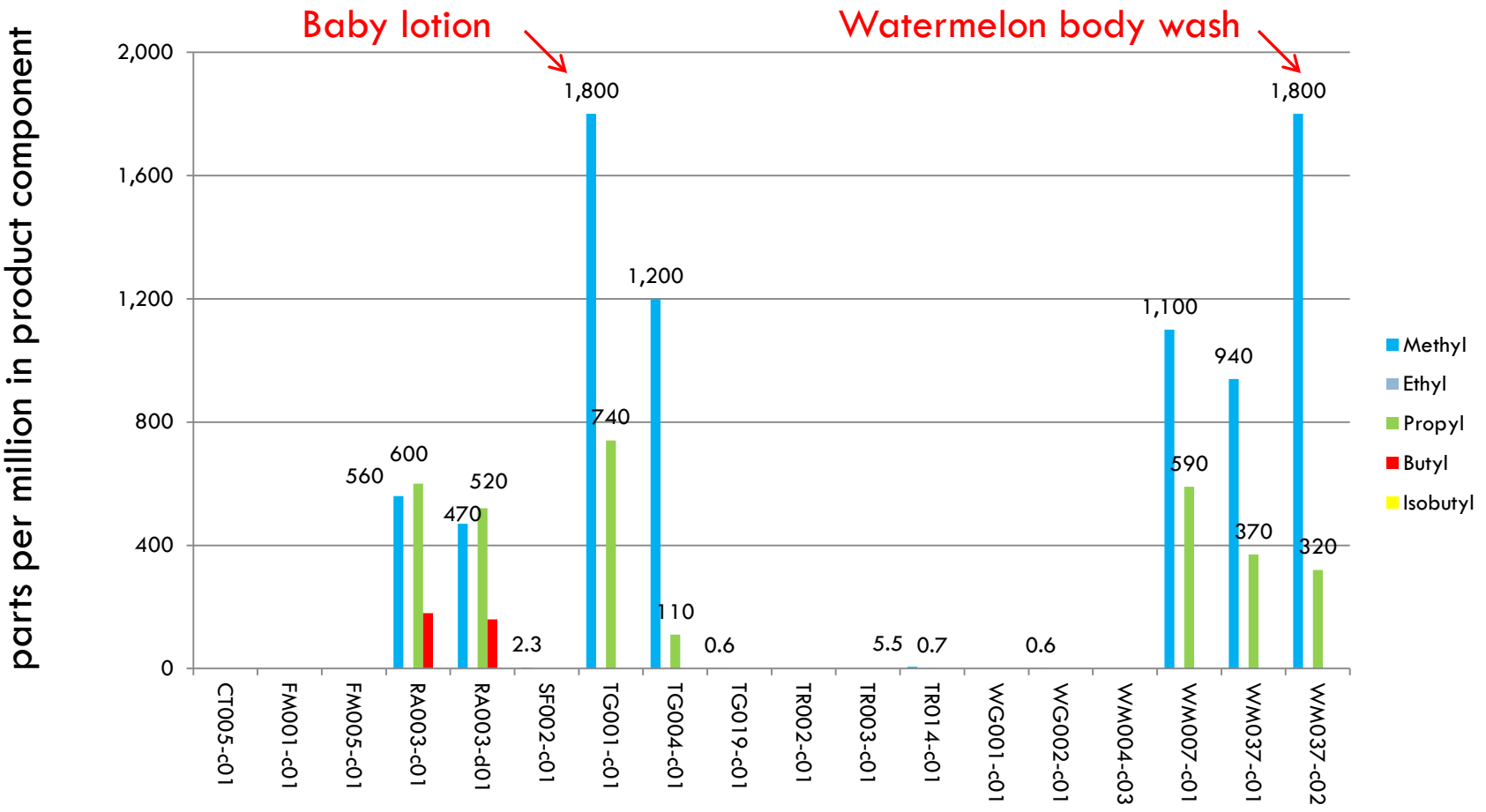
Parabens – baby & bath



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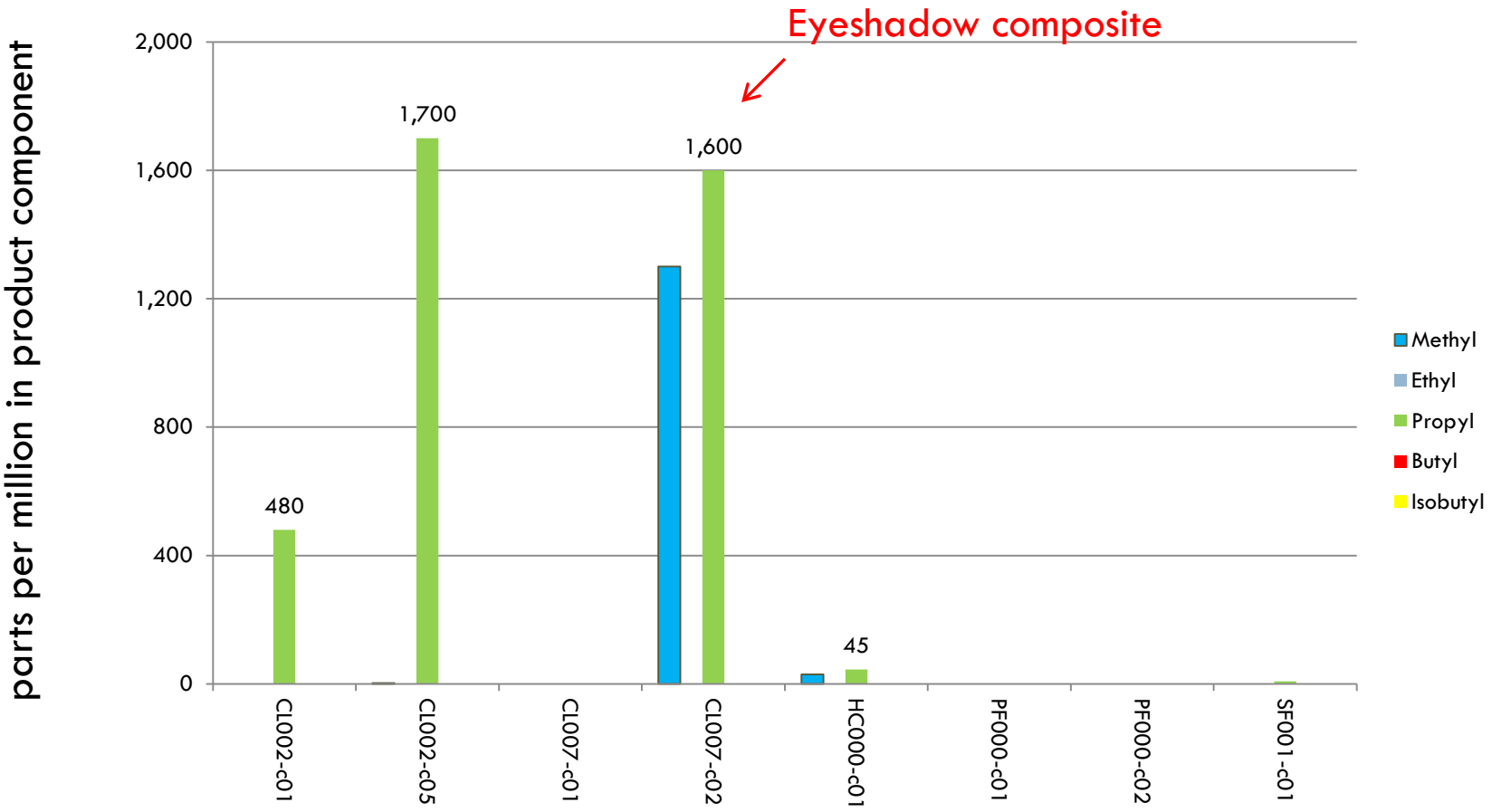
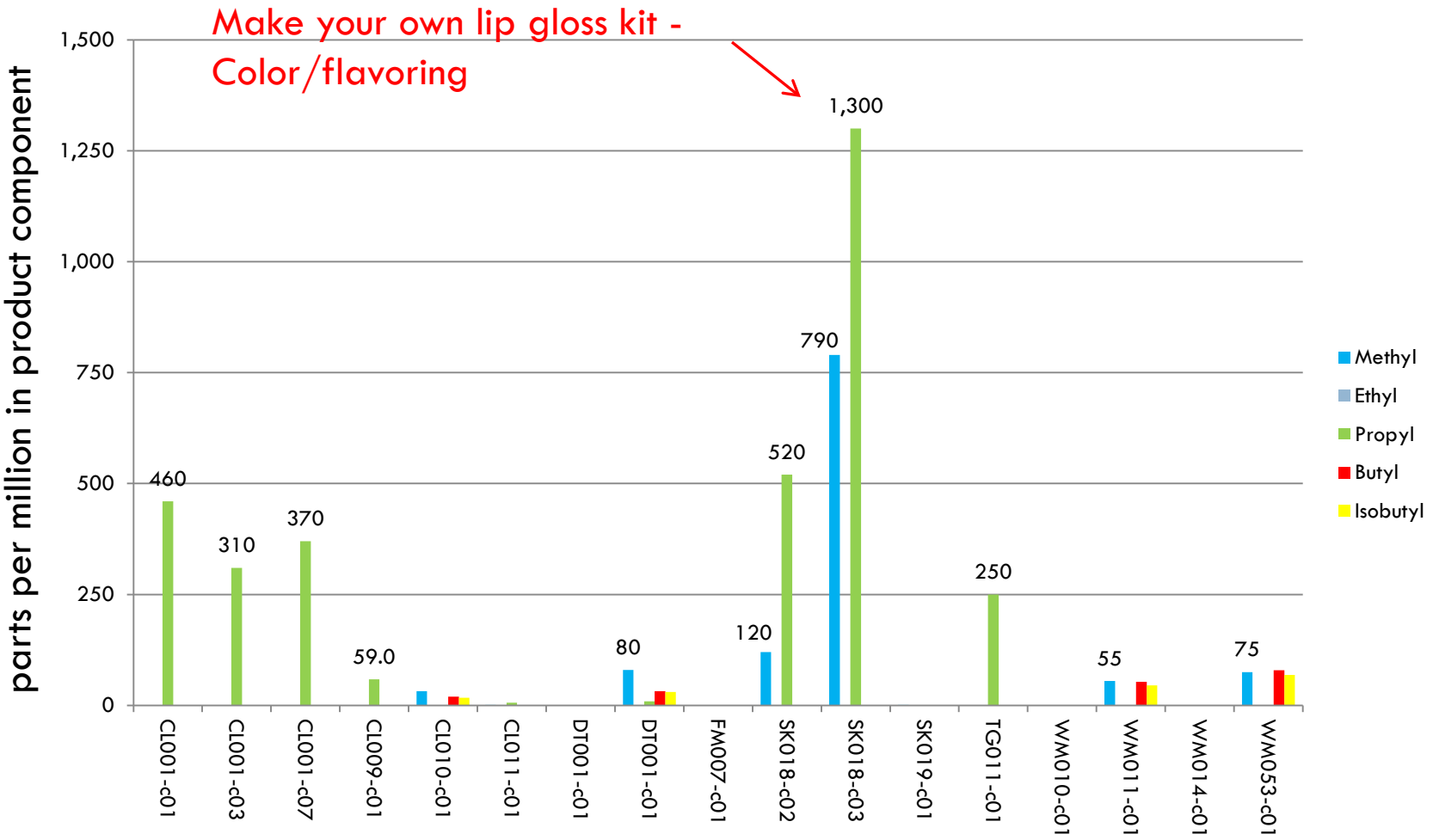
Parabens – cosmetics/fragrances



Parabens – lip balm/gloss



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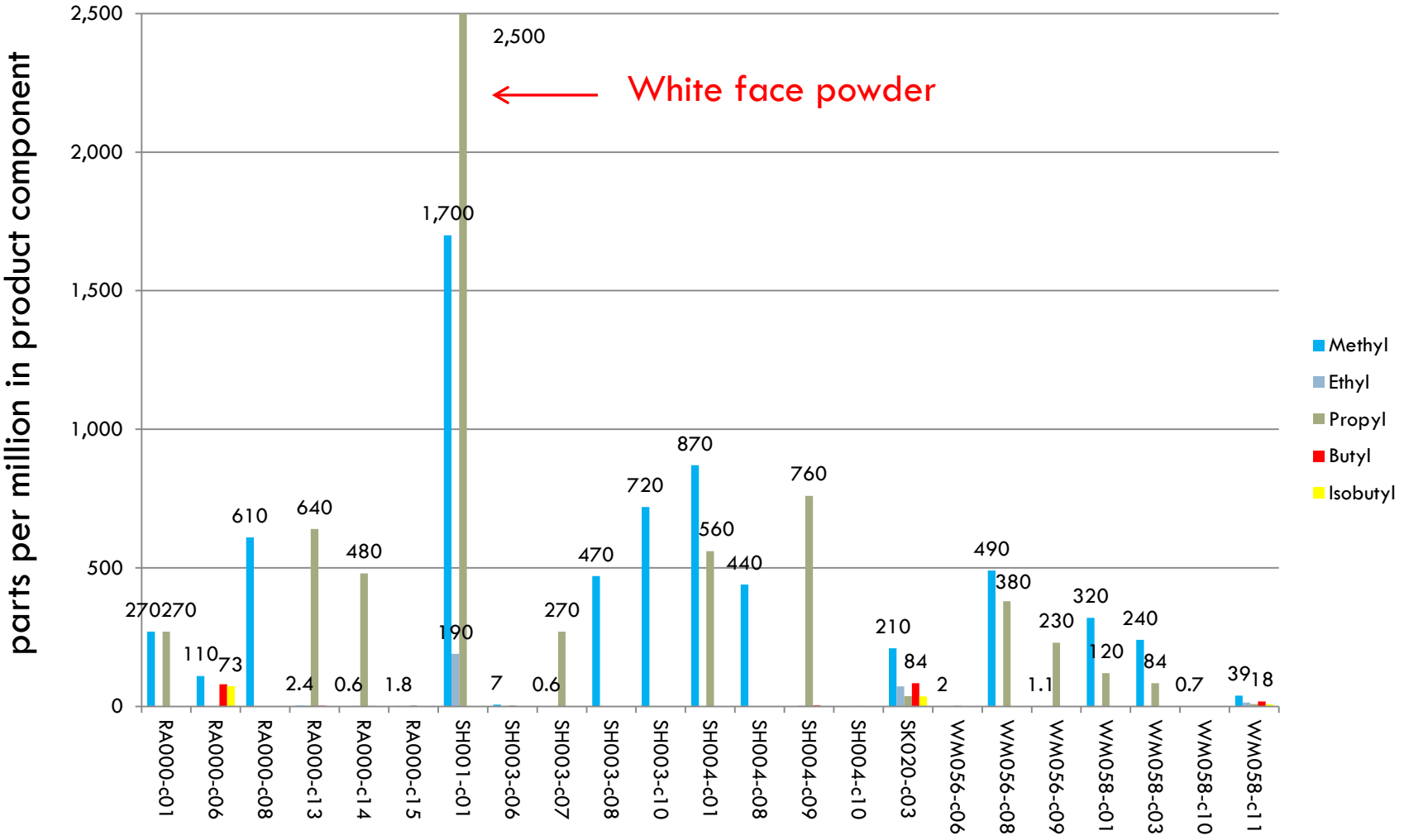
Parabens – Halloween makeup



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Parabens – conclusions

Conclusions:

- Parabens can be analyzed at low levels in a wide variety of products
- Found in appreciable levels in many products mouthed by children or applied to their skin
- Halloween makeup contained highest levels and greatest incidence of detection

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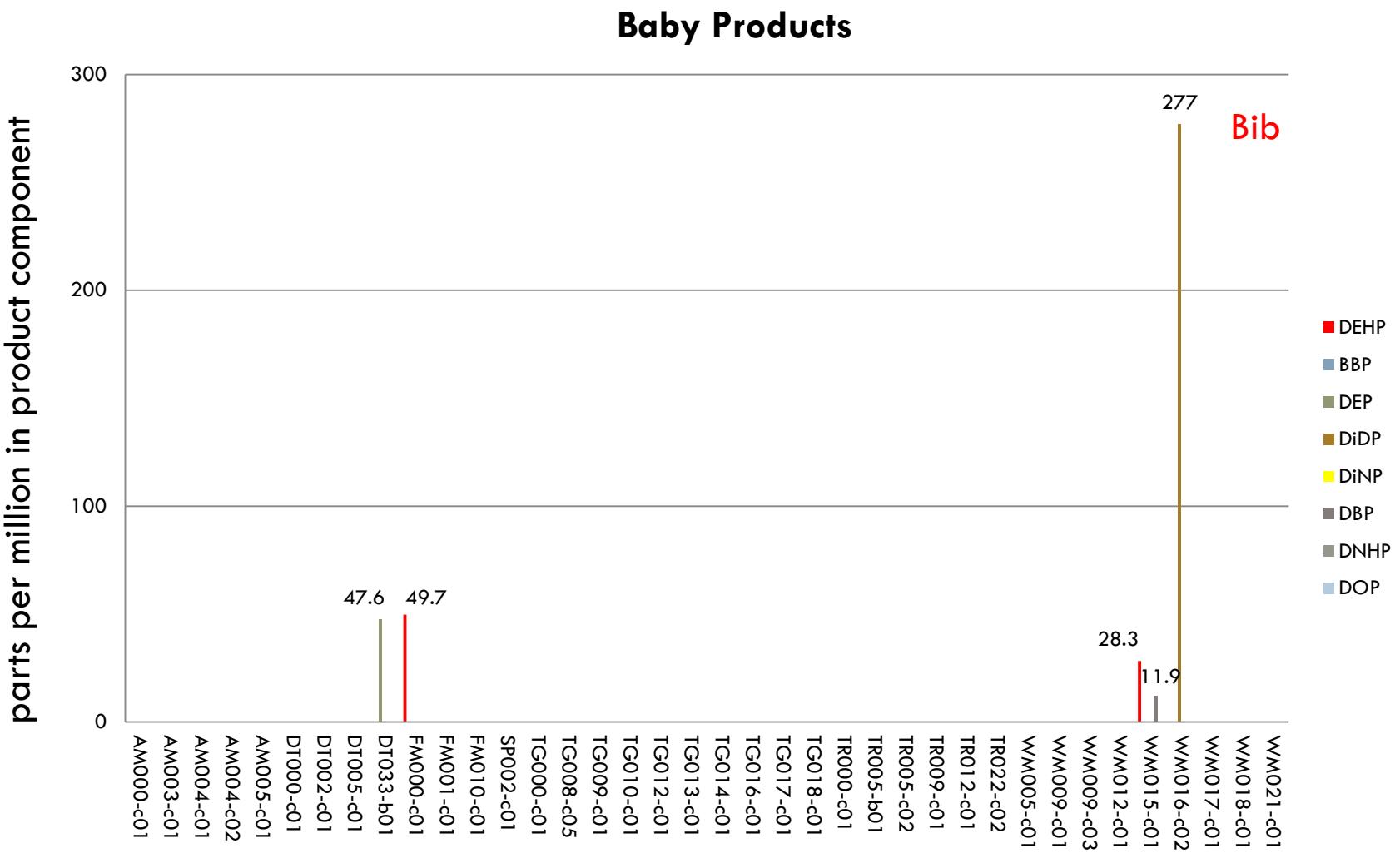
Phthalates – products tested

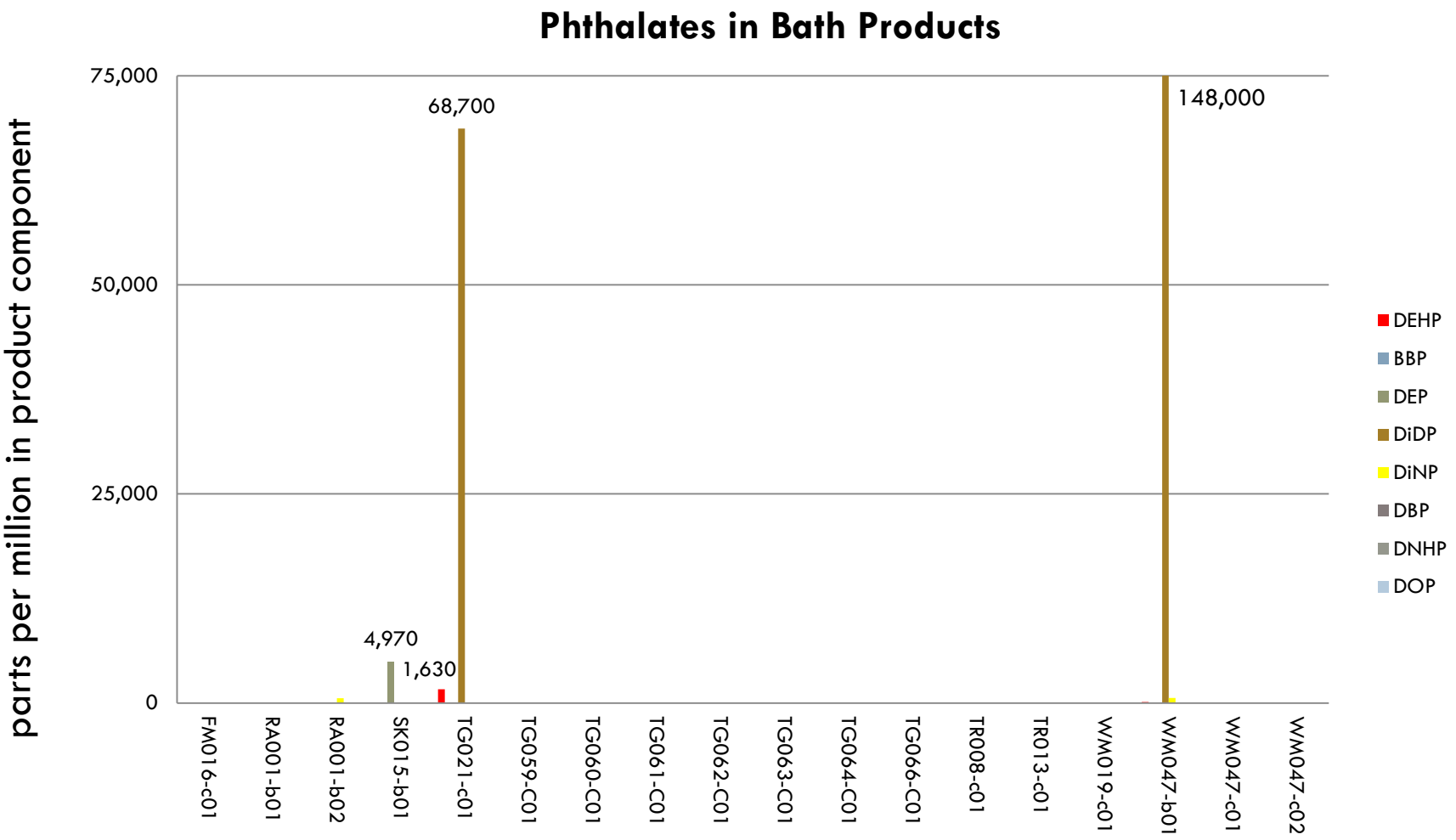
Phthalates are widely used as plasticizers to soften plastics. There are 9 phthalates on the list of Chemicals of High Concern to Children. They are listed for concerns about developmental toxicity, reproductive toxicity, endocrine disruption. **Only 6 of these phthalates are restricted by federal law above 1000ppm.**

Category	Number	Percent
Art	5	5.8%
Baby	35	40.7%
Bath	15	17.4%
Cosmetics	7	8.1%
Fragrance	12	14.0%
Halloween items	5	5.8%
Shoes	7	8.1%

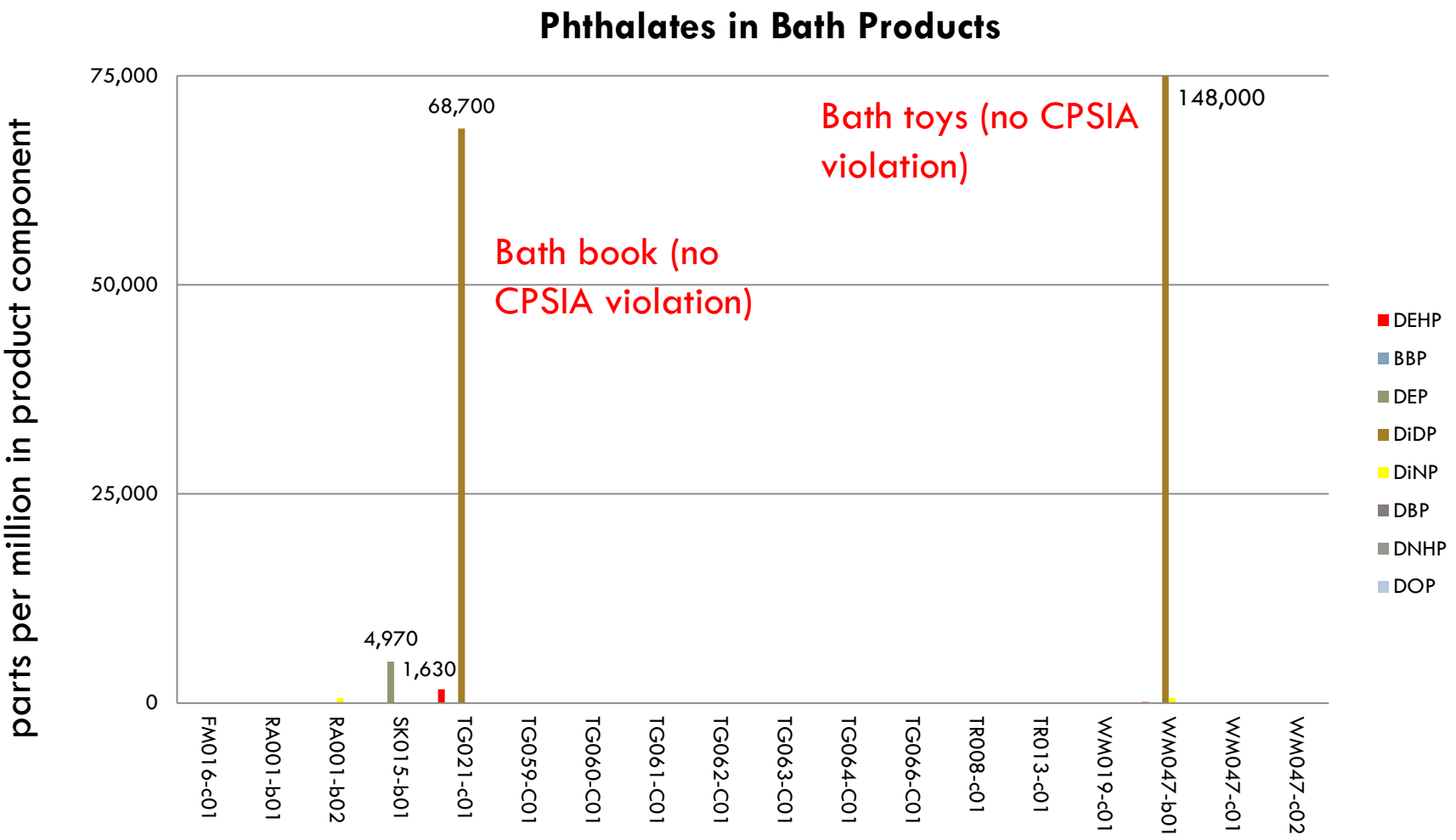
Phthalates – baby products



Phthalates – bath products



Phthalates – bath products



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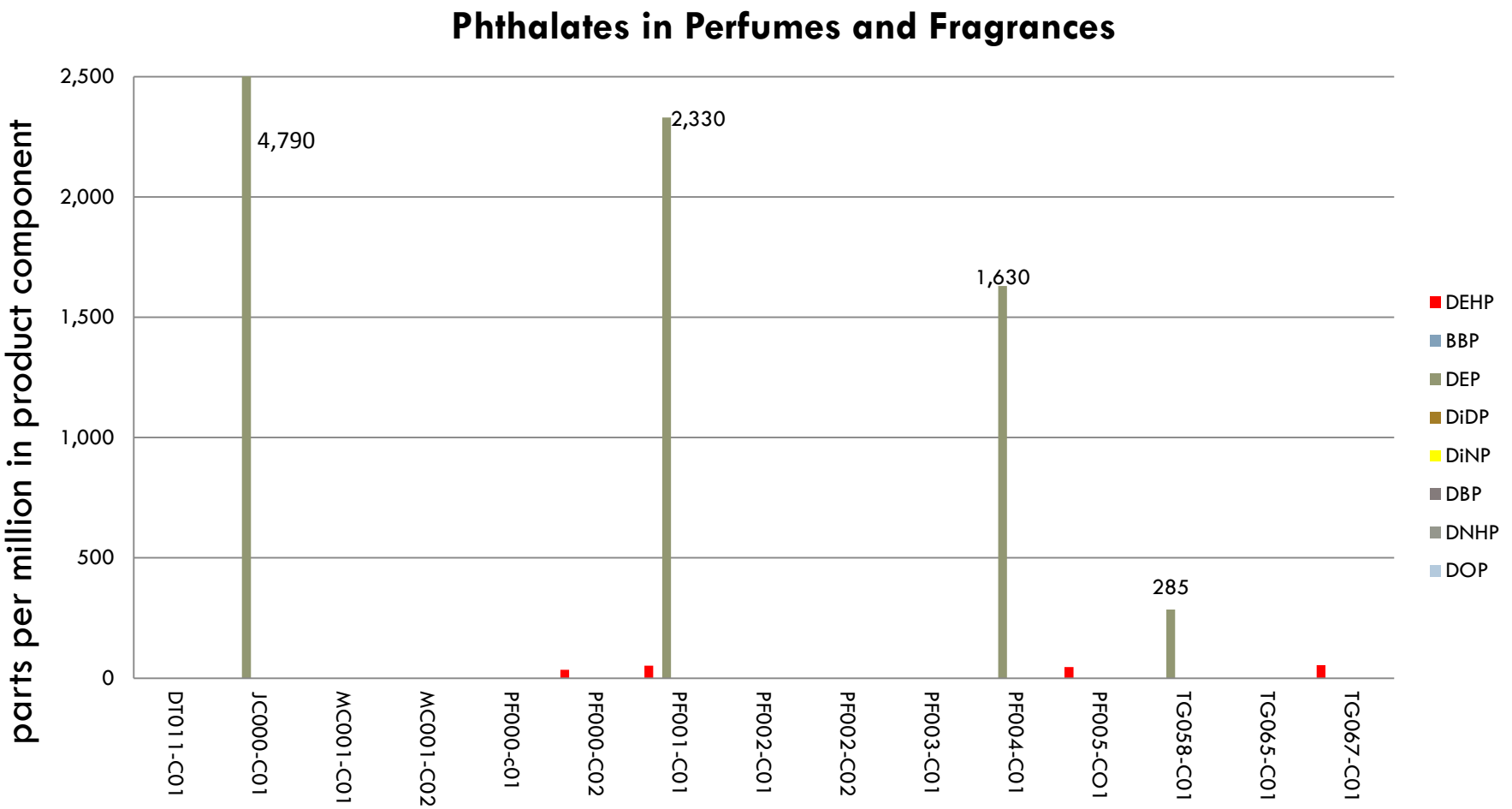
Phthalates – perfumes/fragrances



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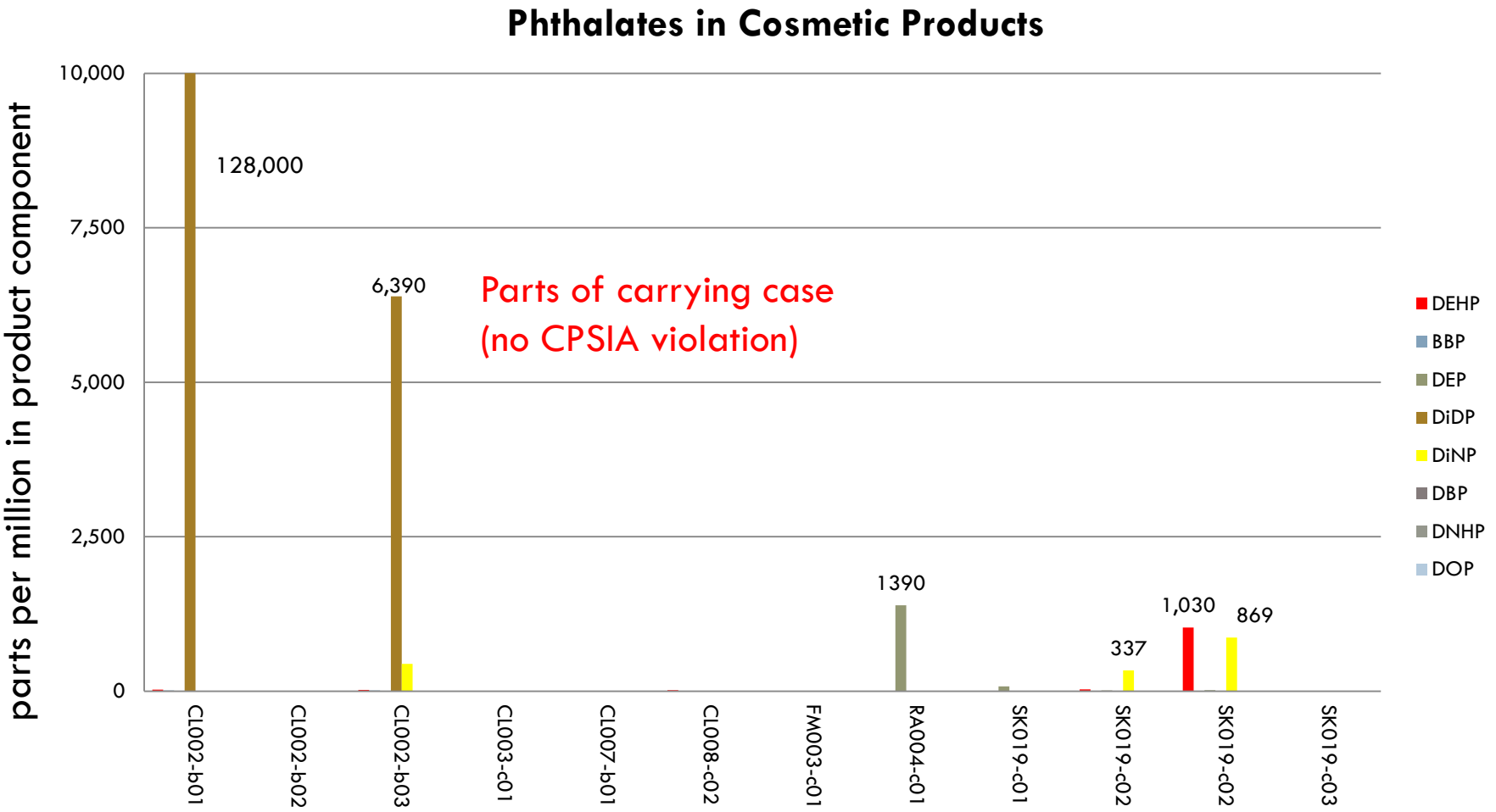
Phthalates – cosmetics



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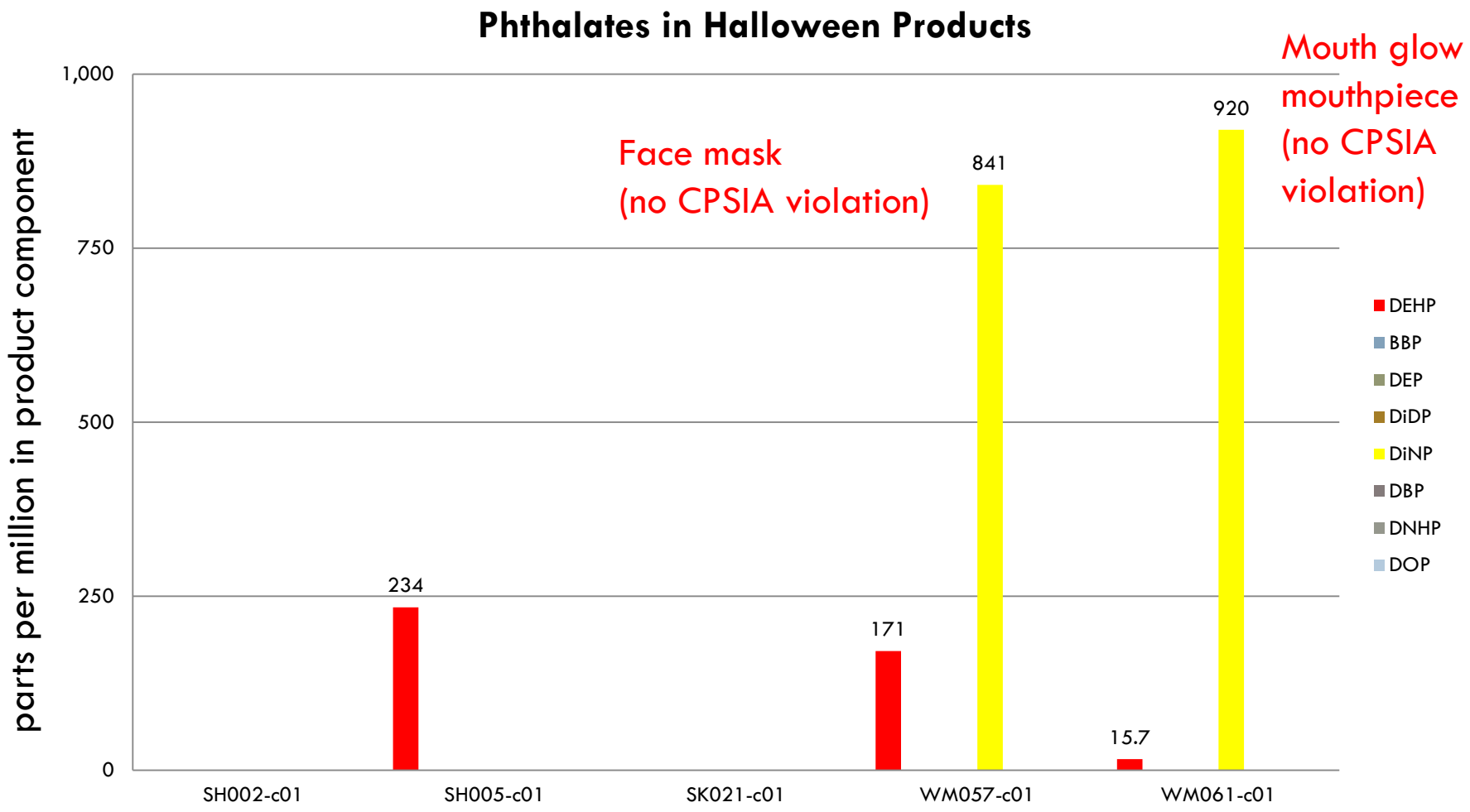
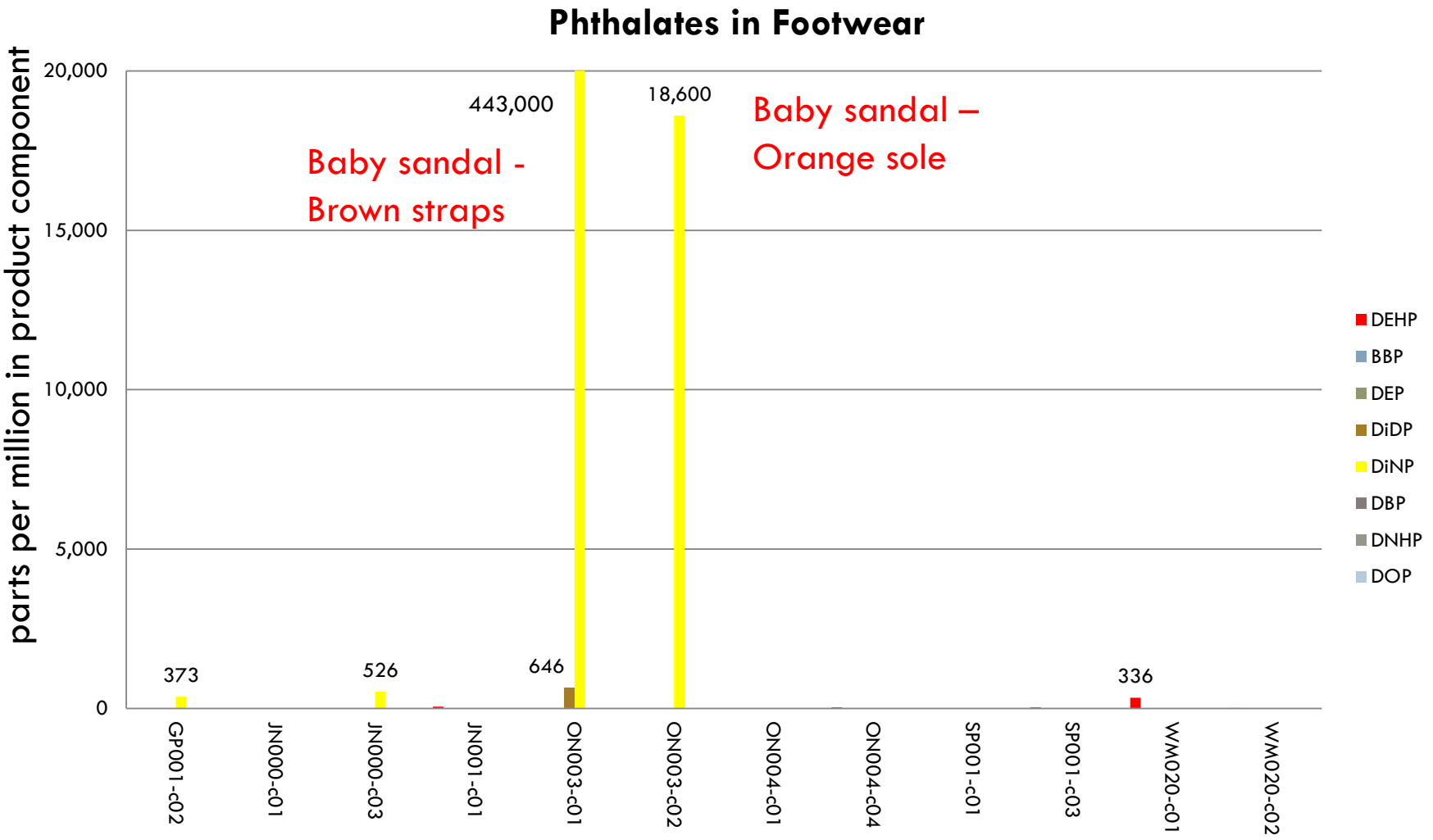
Phthalates – Halloween



Phthalates – footwear



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Phthalates – conclusions

Conclusions:

- Phthalates can be analyzed at low levels in a wide variety of products
- Found in appreciable levels in many products
- Found in some unexpected product types (e.g. makeup)
- High levels found in a few products (e.g. baby sandals)

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Metals – conclusions

Conclusions:

- A wide range of product types can be analyzed for the metals of interest.
- Metals can be detected at ppm levels in all products categories encompassing a range of different media types.
- Several products contained antimony at reportable levels.
- Cobalt was found in most clothing tested and may be tied to the use of cobalt based blue dyes.
- A majority of children's products tested had at least one of the six metals at reportable levels.

Other product testing

Testing containers for children under 3 & sports bottles to assure compliance with restrictions on Bisphenol A (Ch. 70.280 RCW)

Lab budget	$43, 538 (74 samples) Ecology funds
Target chemicals	Bisphenol A
Target products	Baby bottles, sippy cups, toddler containers (bowls and plates), and plastic & metal sports bottles
Final report	https://fortress.wa.gov/ecy/publications/SummaryPages/1303005.html

Results: Only one sample contained BPA above PQL (20 ppm).
High degree of compliance with restrictions on BPA.

Other product testing

Testing products that may contain flame retardants to assure compliance with restrictions on PBDEs and investigate current use of alternatives (Ch.70.76 RCW)

Lab budget	$175,000 (~300 samples) EPA National Estuary Program Puget Sound grant funds
Target chemicals	PBDEs (penta-, octa-, & deca-), polybrominated diphenyl ethanes, TCEP, TCPP, TDCPP, RDP, TPP
Target products	• Products containing polyurethane foam (changing mats, children's furniture, mattresses & pads) • Flame retardant workwear, children's sleepwear • Electrical products (hair dryers, heaters, cooking implements, battery chargers) • Electronic products (televisions, computers)
Final report	March 2014

Initial results: Detections of bromine via X-Ray Fluorescence screening indicating likely presence of brominated flame retardants. Lab results pending.

DEPARTMENT OF ECOLOGY
State of Washington

Next Steps

- Analyze reported information
  - Opportunities for safer alternatives
- Ongoing compliance efforts
  - Product testing
  - Database development

Joshua Grice

Research Analyst

Reducing Toxic Threats

Washington State
Department of Ecology

(360) 407-6786

joshua.grice@ecy.wa.gov

DEPARTMENT OF
ECOLOGY
State of Washington

RESOURCES

Children's Safe Product Act:

http://www.ecy.wa.gov/programs/swfa/cspa/

RCW 70.270

http://apps.leg.wa.gov/RCW/default.aspx?cite=70.240

WAC 173-334

http://apps.leg.wa.gov/WAC/default.aspx?cite=173-334

Listserv:

http://listserv.wa.gov/cgi-bin/wa?A0=CHILDRENS-SAFE-PRODUCTS

Search data on children's products:

http://www.ecy.wa.gov/programs/swfa/cspa/search.html

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