

Defining a role for Sea Grant engagement in CECs

National webinar

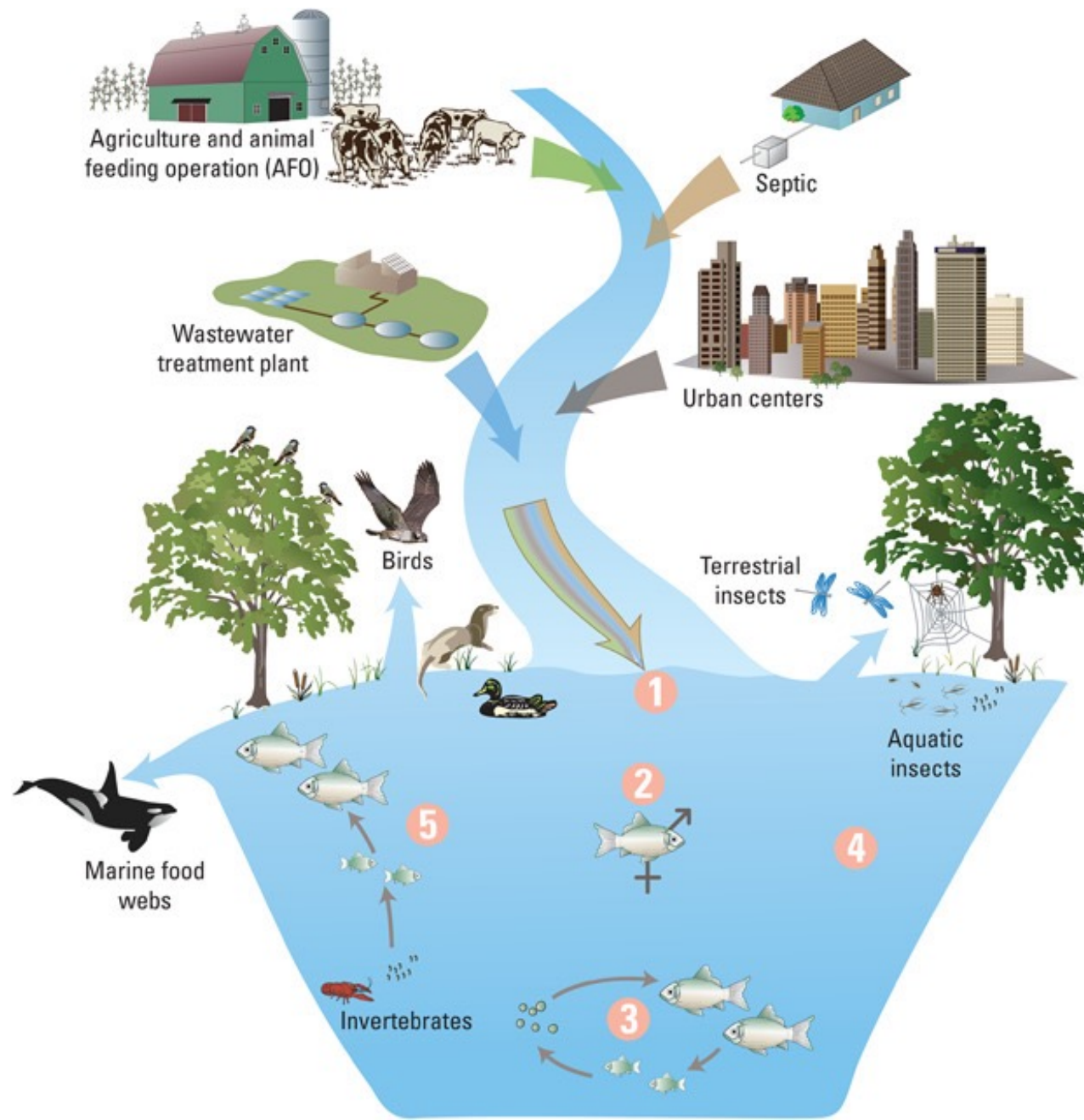
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Contaminants of emerging concern

- Refers to the **thousands of chemical** in the environment that are **rarely monitored**, but for which **emerging evidence** shows they may pose a threat to ecosystem, animal and human health
 - Have toxicities not previously recognized
 - Building up in the environment
 - Accumulating in the bodies of wildlife and/or humans
 - Potential to cause adverse effects on public health or the environment
- May be candidates for **future regulation** depending on their (eco)toxicity, potential health effects, public perception, and frequency of occurrence in environmental media.

Class	Definition	Example	Impact on biota
Brominated flame retardants	Materials or coatings that inhibit or resist the spread of fire	<ul style="list-style-type: none"> polybrominated diphenyl ethers (PBDEs) hexabromocyclododecane (HBCD) 	<ul style="list-style-type: none"> endocrine disruption decreased reproductive success reduced survival neurobehavioral effects
Microplastics	<p>Plastic pieces <5 mm</p> <p>1° MPs are attributed to those directly manufactured plastics</p> <p>2° MPs arise from the fragmentation of larger pieces of plastics</p>	<ul style="list-style-type: none"> polyethylene Polystyrene polypropylene 	<ul style="list-style-type: none"> endocrine disruption reduced feeding ability reduced growth reduced reproduction reduced survival
Nanomaterials	Materials <100 nm that have great strength, thermal stability, and low permeability	<ul style="list-style-type: none"> titanium dioxide zinc oxide carbon nanotubes silver 	<ul style="list-style-type: none"> reduced survival reduced growth rate reproductive failure impaired feeding ability
Per- and Polyfluoroalkyl Substances (PFAS)	Chemicals used to make carpets, clothing, fabrics, paper packaging for food that are resistant to water, grease, or stains	<ul style="list-style-type: none"> perfluorooctanoic acid (PFOA) perfluorooctane sulfonate (PFOS) firefighting foam 	<ul style="list-style-type: none"> increased mortality inhibited growth reduced diversity
Pharmaceuticals and Personal Care Products (PPCP)	Chemicals used as drugs for human and animal, and those used as personal items like toiletries and cosmetics	<ul style="list-style-type: none"> Antibiotics Ibuprofen Acetaminophen Antidepressants Triclosan Musks and fragrances 	<ul style="list-style-type: none"> altered behavior endocrine disruption, reduced reproduction reduced growth rates reduced survival



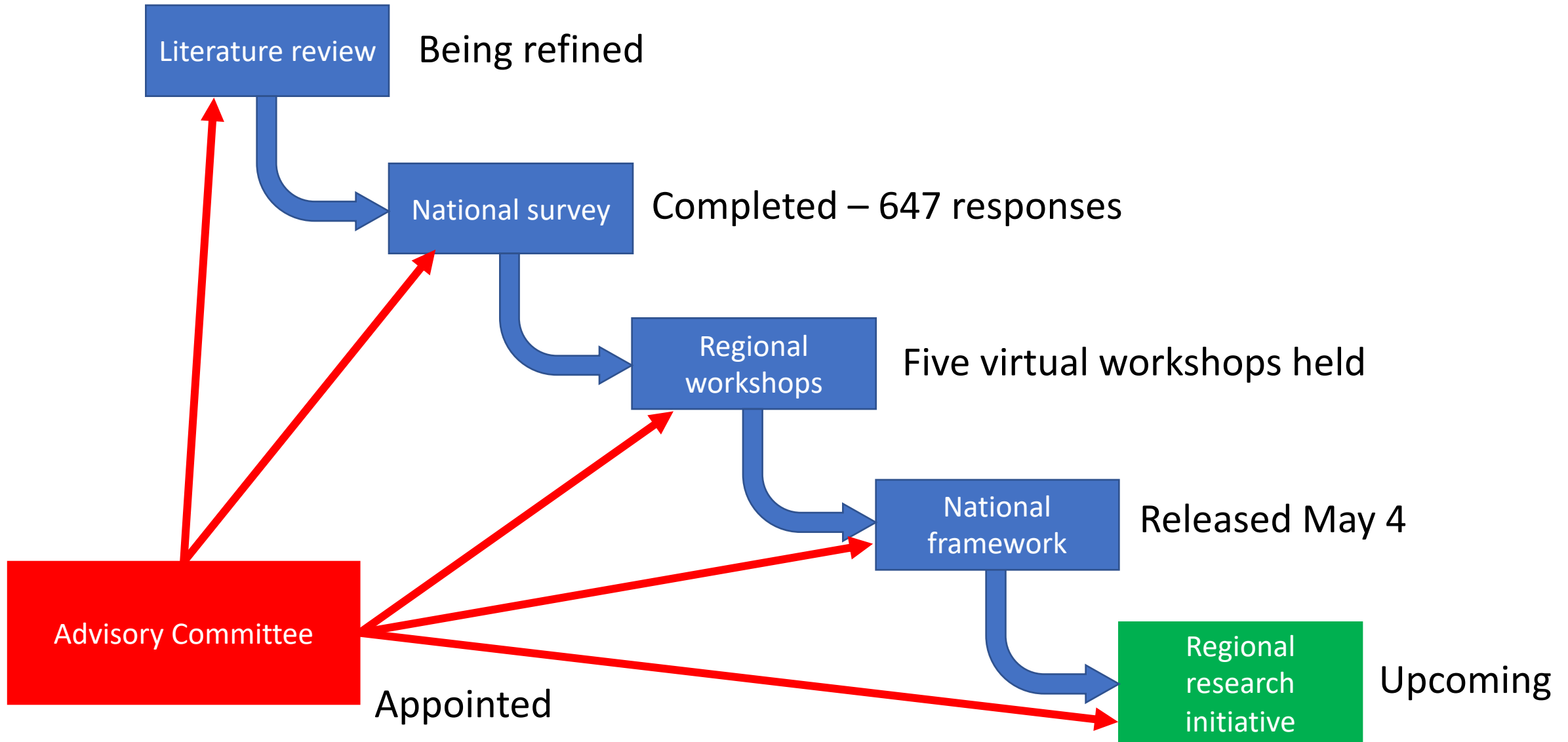
Who deals with CECs?

- **EPA** – *Policies* to safeguard public health, protect the environment, and hold polluters accountable
- **USGS** – *Monitoring* and assessing natural resources, fate and transport in fish and wildlife (source to receptor)
- **NIH** – *Human health* (and relevant animal models)
- **NOAA** – *Mussel watch*
- **State agencies** – Differs by state
- **Sea Grant???**

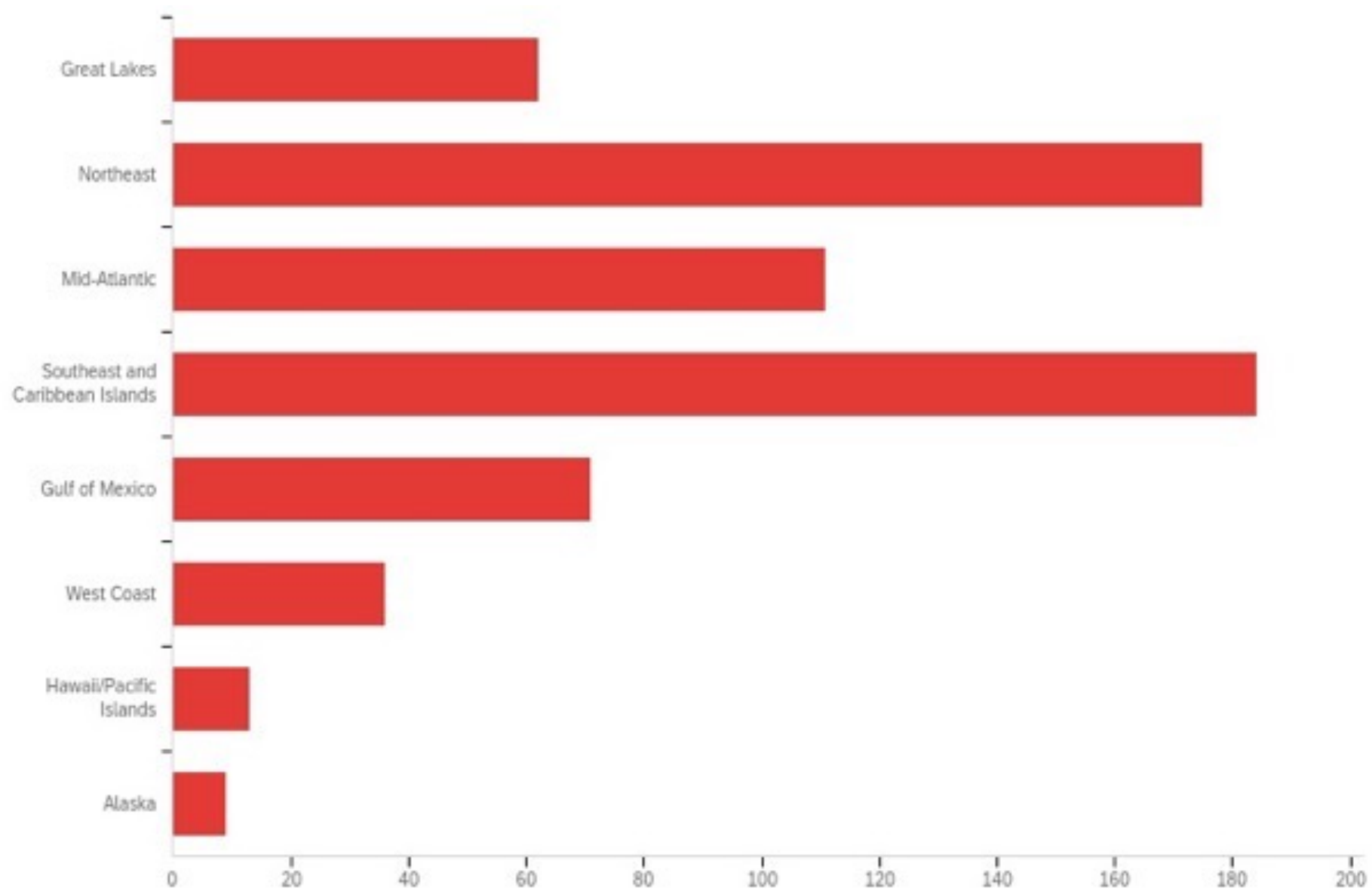
Project background

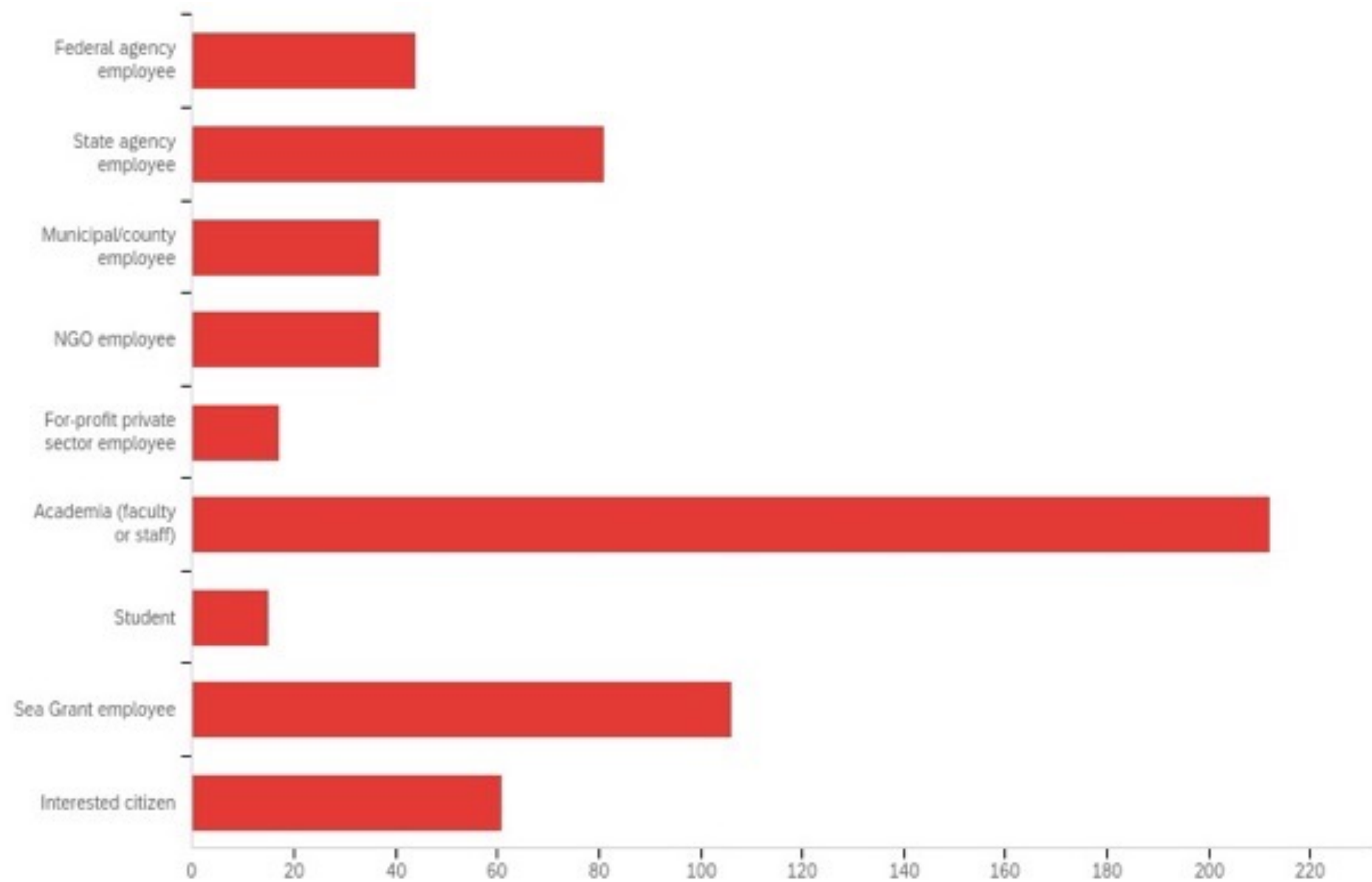
- **Congressional mandate** for Sea Grant to support research on CECs
- NSGO call for proposals, our team received the award
- Project goals:
 - **Scoping exercise** to define a strategic role for Sea Grant re CECs
 - Expected outcome: A national framework for Sea Grant to engage/invest in CECs
 - Develop and manage a **regional research initiative** (Atlantic coast)
 - Expected outcome: Approximately \$600k to be competed

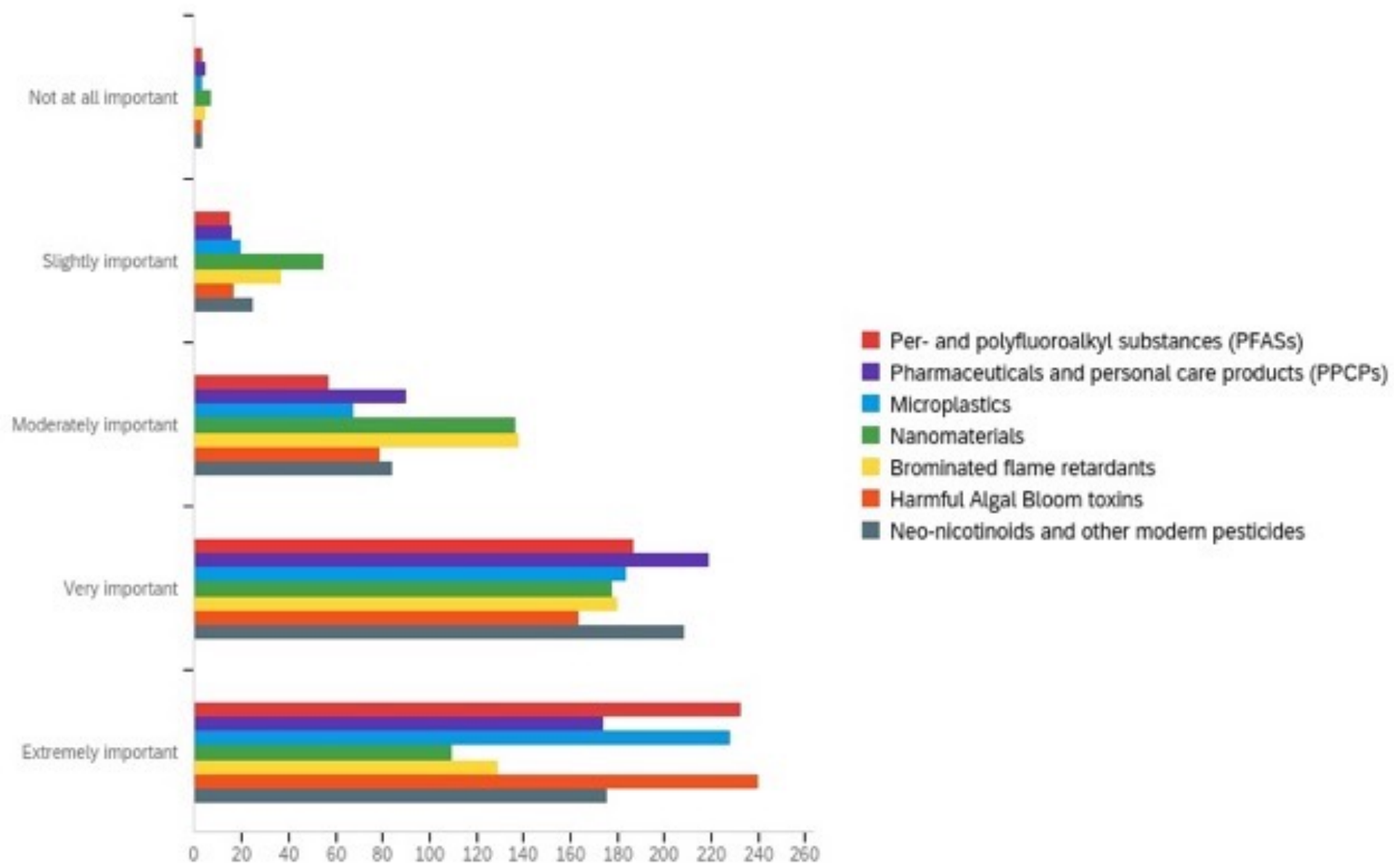
Approach



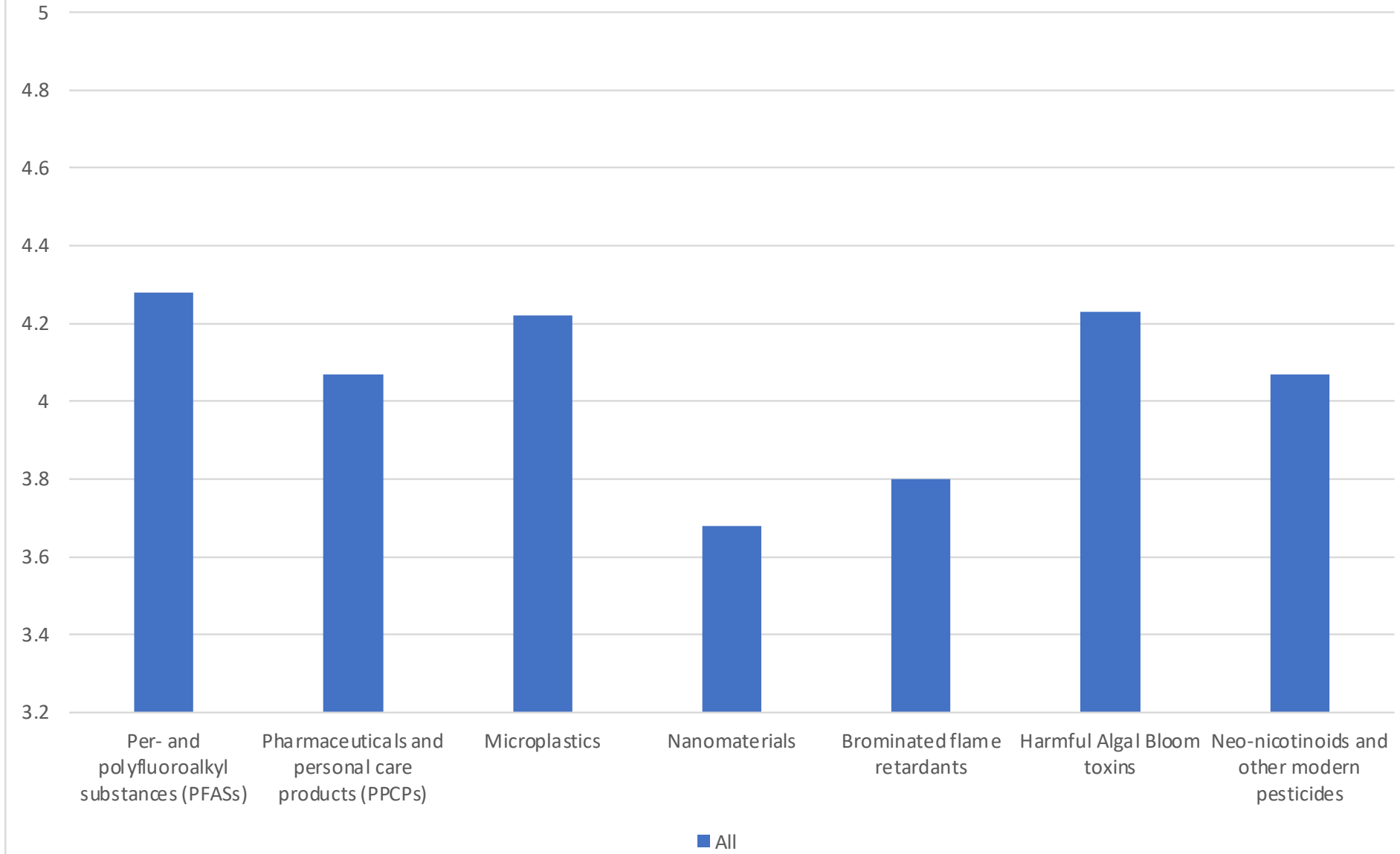
Survey findings



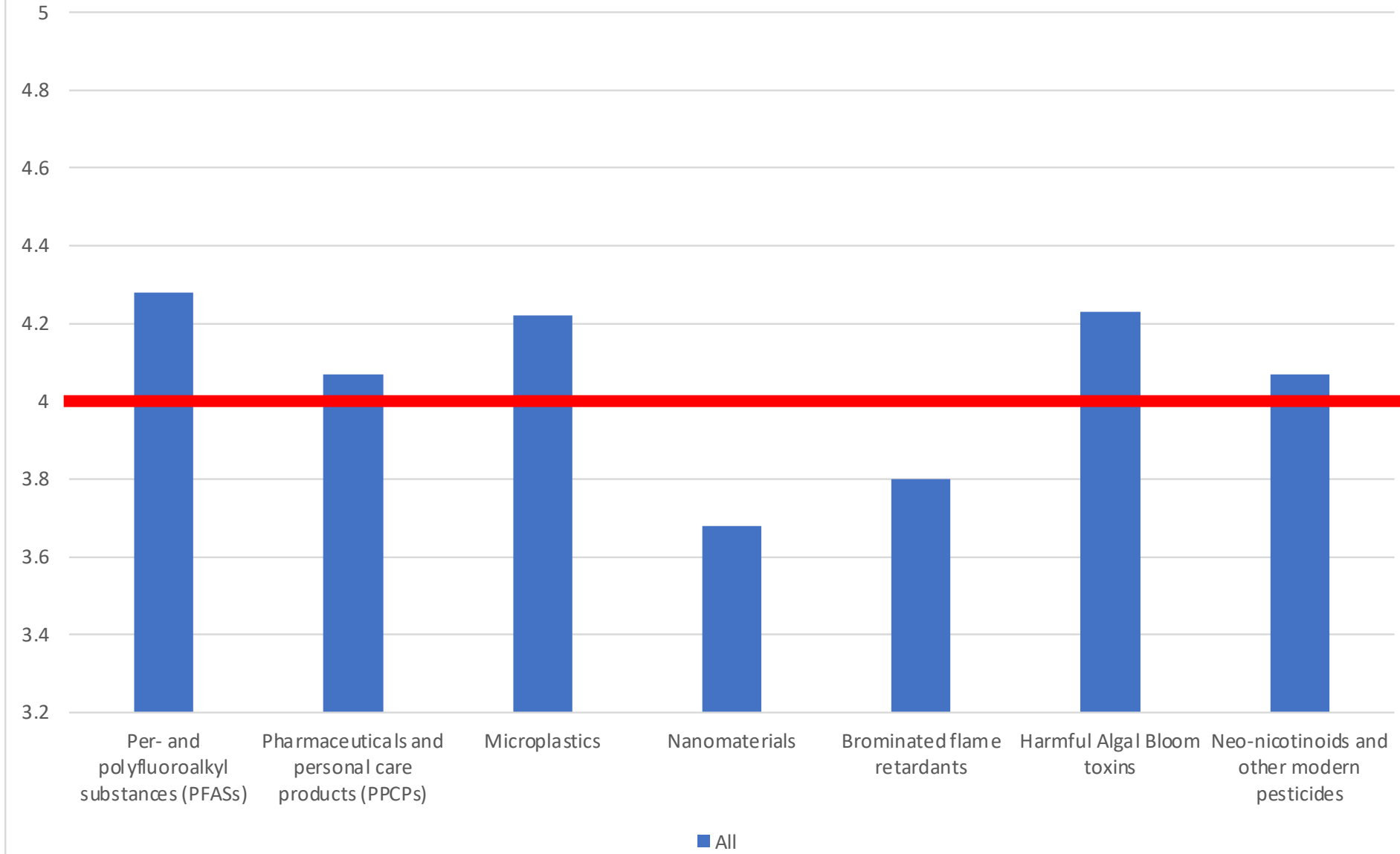




Average

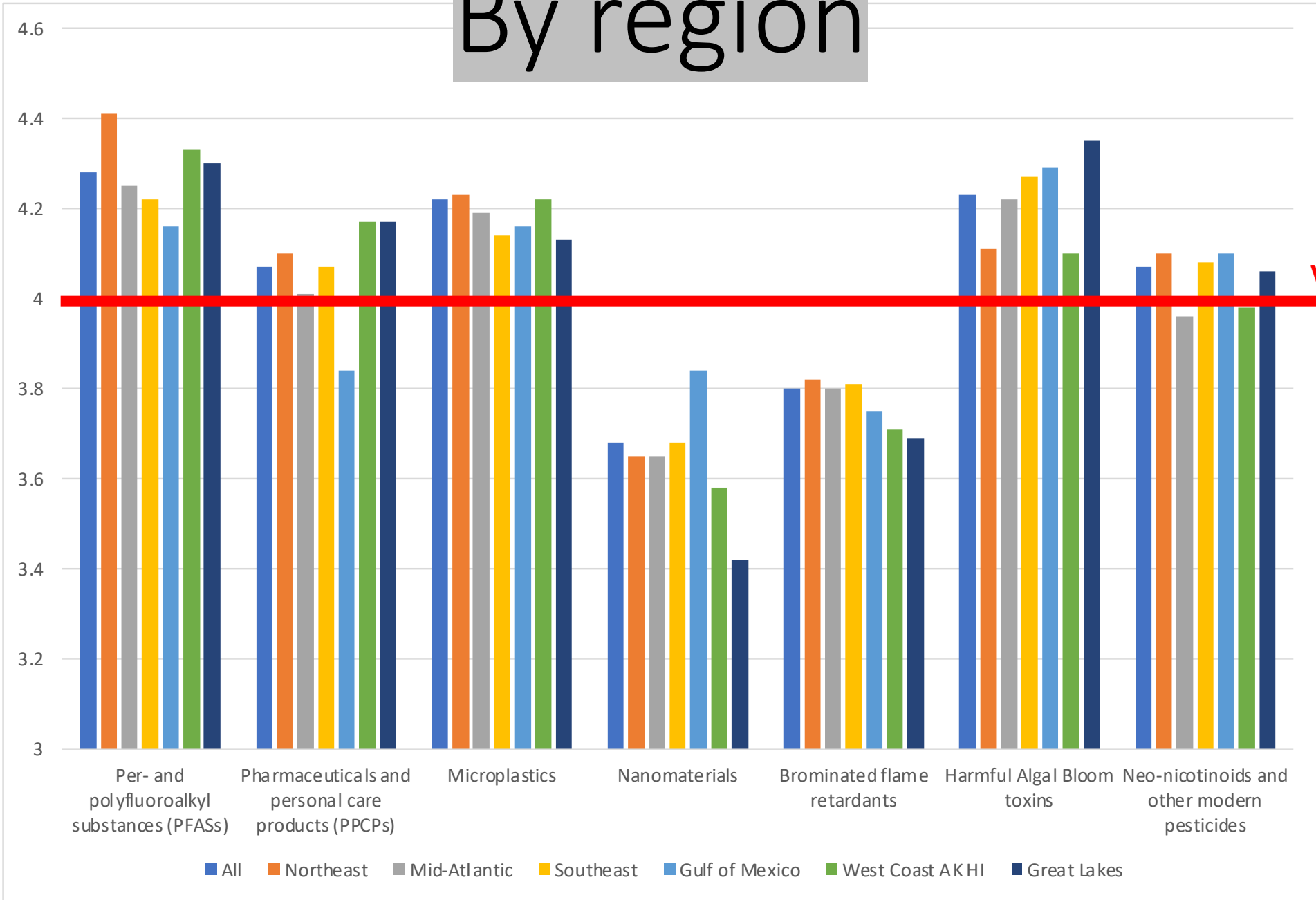


Average



Very important

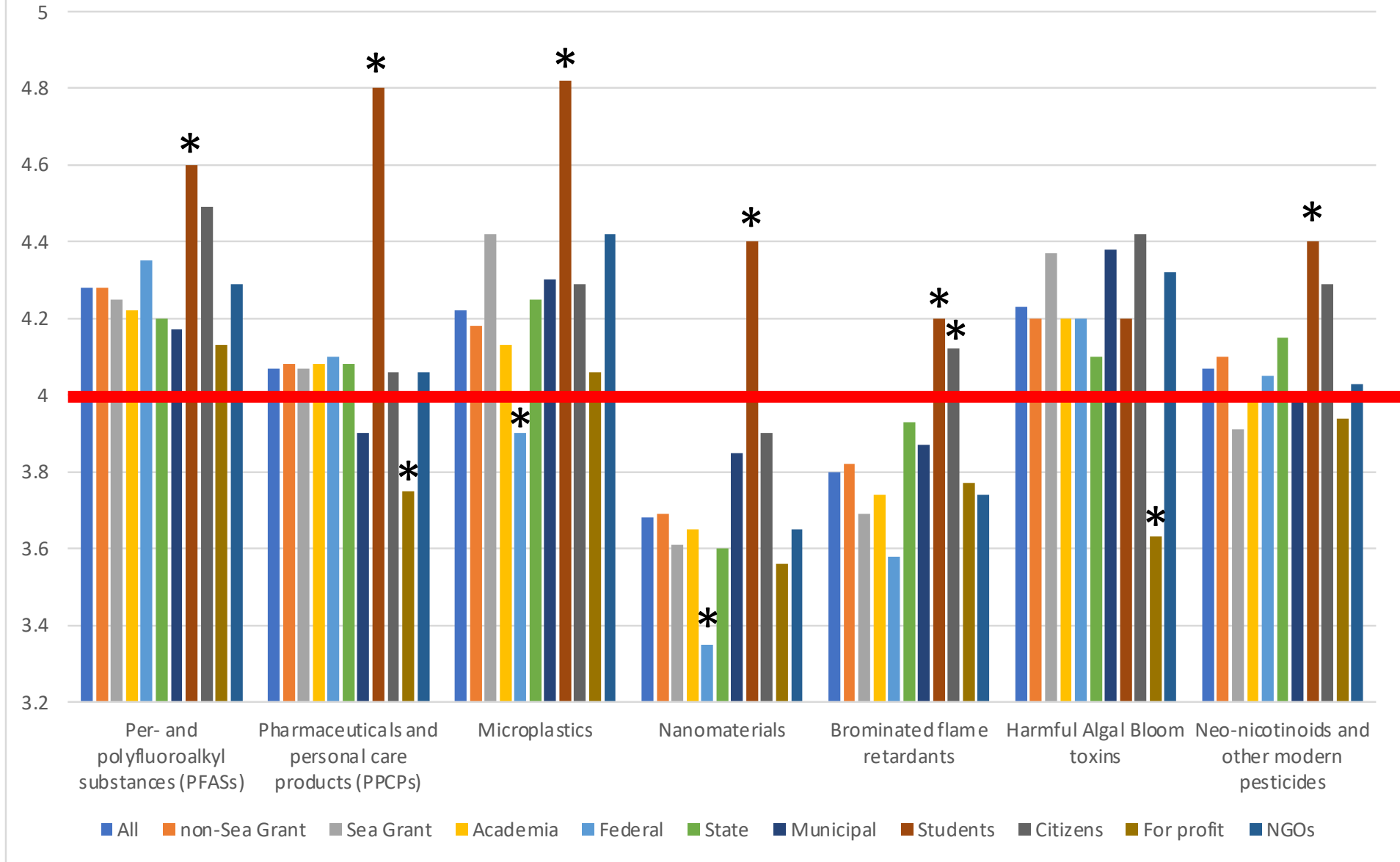
By region



Very important

* +/- 0.3

By sector

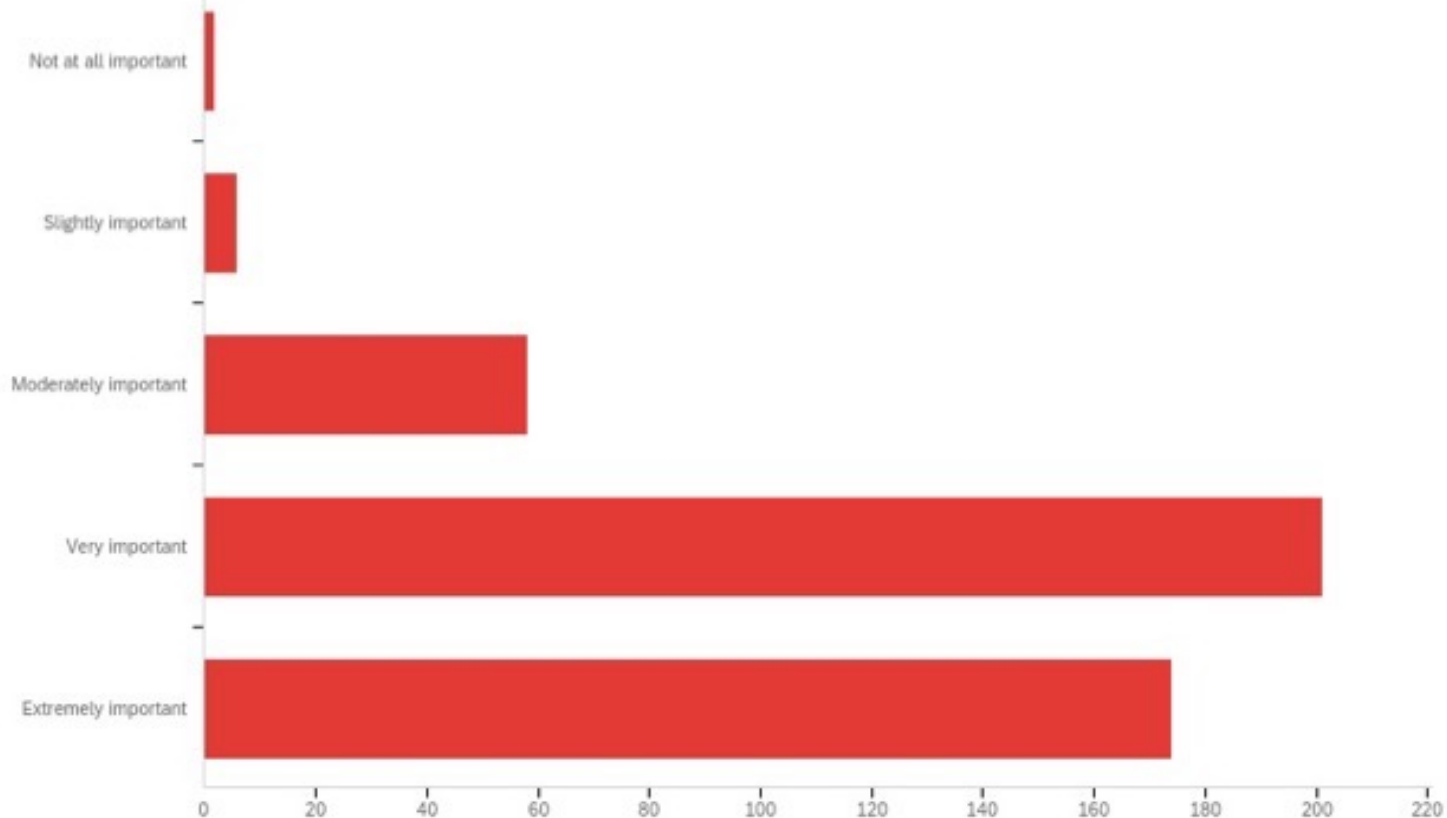


Very important

* +/- 0.3

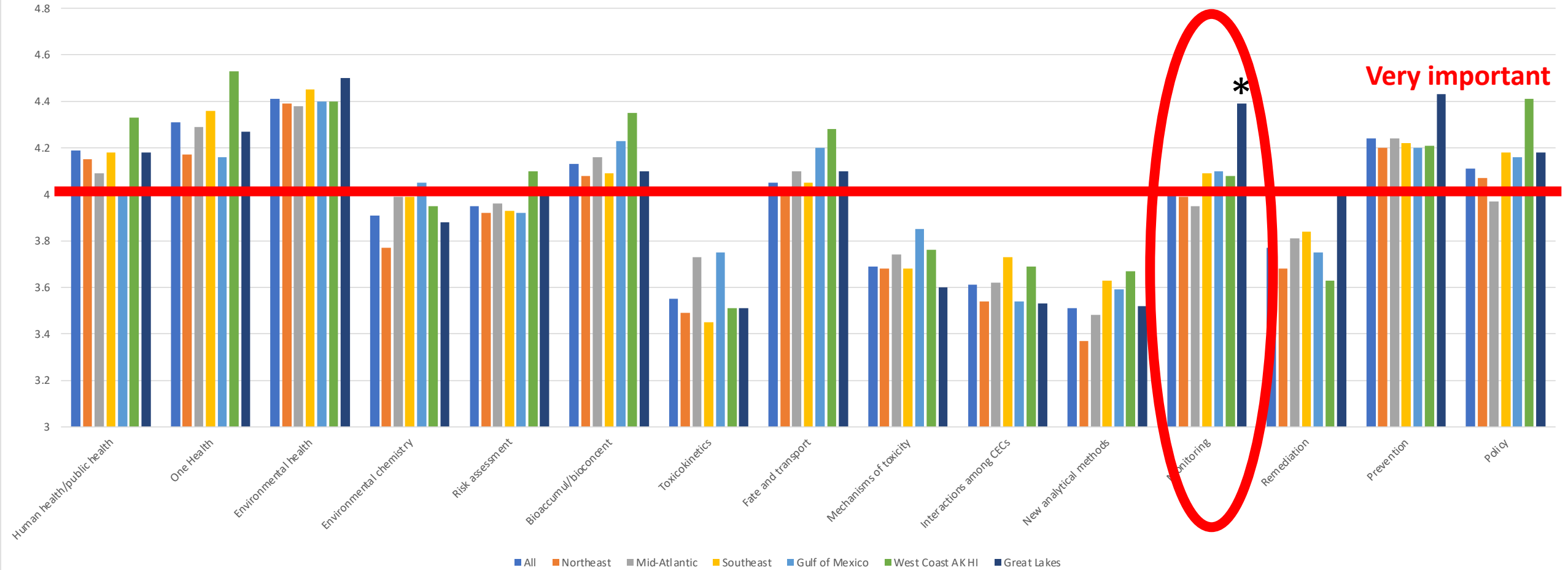
- CECs are highly relevant to the mission of Sea Grant
 - 85% of respondents thought CECs were very or extremely important to the mission of Sea Grant

Importance to the mission of Sea Grant



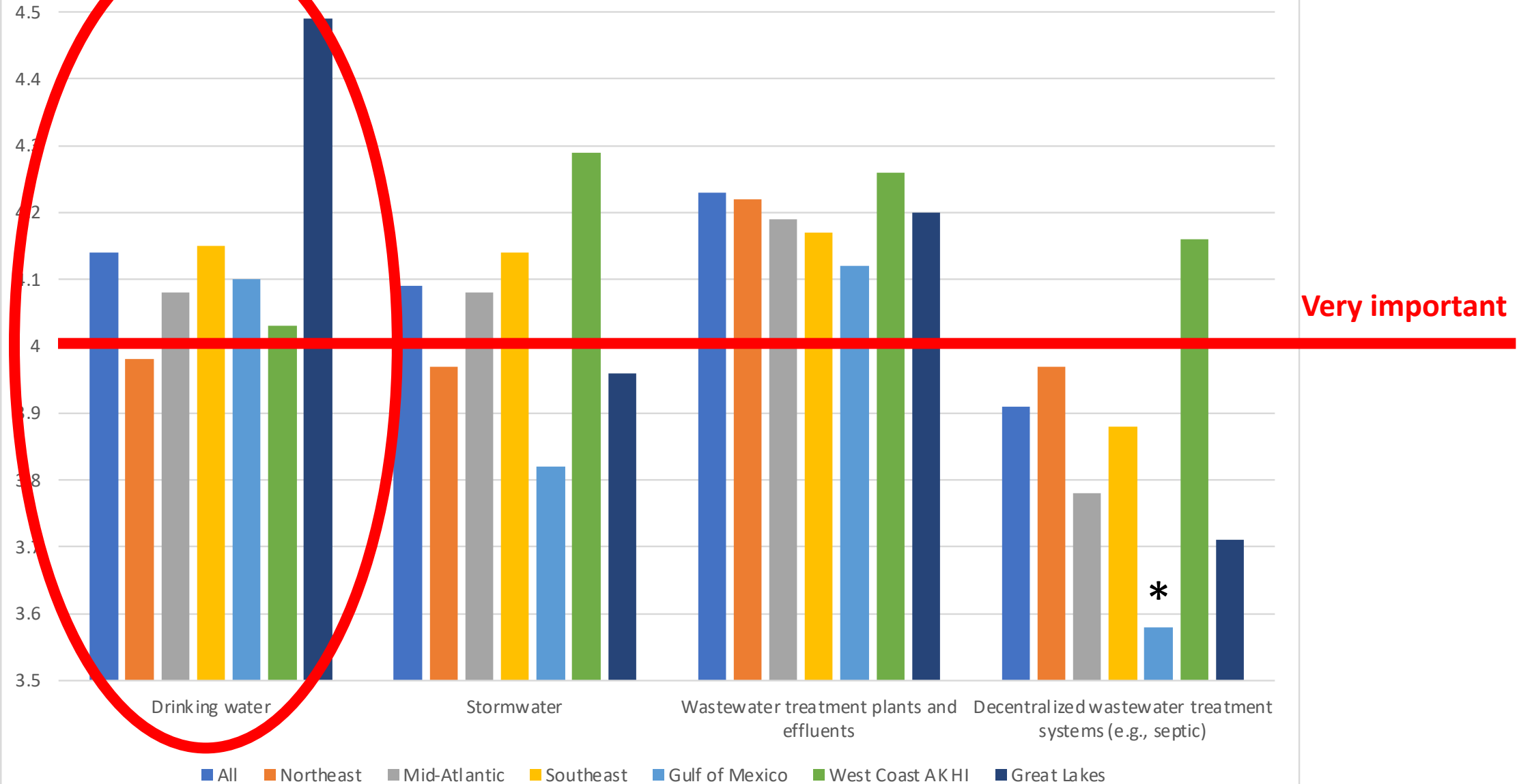
Regional differences

Average



* +/- 0.3

Average



Very important

* +/- 0.3

In the region (who is doing what)

Scoping highlights / Areas for Sea Grant investments

- Proposed role for Sea Grant's engagement in CECs
 - Functional and topical areas
 - Scope and scale
 - Partnerships
- Recommendations for Sea Grant programming
 - Research
 - Extension
 - Education
- Environmental Justice

Functional and topical focus

- Sea Grant investments should continue to include the **Research, Extension and Education** continuum.
- Sea Grant should focus on engaging relevant **partners**.
- Different **classes of chemicals** may be important for different reasons.
- **Monitoring** is a long-term commitment that may *not* be a best fit for a Sea.

Scope and scale

- Focus on **One Health / Environmental Health**, including sources and pathways for exposure, and focus on species of ecological importance
- **Prevention and policy** interest align with the research, extension, education, communication and legal functions of Sea Grant, and bridging natural and social sciences
- **Ecosystems** (aquatic food chain), **commerce** (fishing, aquaculture) and **food** (food security, food safety) all very important and linked
- Focus on **watershed approach**
- Focus on **drinking water, wastewater** and **effluents** as relevant point and non-point **sources** of CECs for humans and the environment

Partnerships

- Sea Grant should continue efforts towards more effective and integrative relationships with **federal agencies**
- Sea Grant should maintain effective and integrative relationships with **state agencies**
- Sea Grant considers the **academic research community** as important partners
- Sea Grant should **leverage resources** with other partners for regional efficiencies
- Sea Grant should consider a new CEC **liaison** position(s) to facilitate partnerships and programming across the Sea Grant network
- Sea Grant should prioritize partner and stakeholder assessments and communication to **integrate communities**, including Black, Indigenous, and People of Color (BIPOC), at the beginning of processes, projects and programs and ensure communication throughout the projects, including findings and impacts

Research priorities

- Focus on broader **ecosystem/ecological impacts**
- Focus on impacts of CECs to **health** (human, animal, ecosystem health)
- Focus on aquatic species, but **fish** may be of particular interest
- Focus on **watershed approach**

Extension priorities

- Connecting **community needs**
- Supporting connection between CECs **ecosystem/taxa impacts and human health**
- **Linking with other agencies**

Education priorities

- Focus on **CECs definitions**
- **Risk Communication**, understanding that CECs detected at low concentrations with high sensitivity methods may or may not impact health of exposed animals/humans (few thresholds for health determined have been determined for CECs).
- **Watershed health** estuary, coast, incorporating CECs specifically into educational plans.

Environmental Justice considerations

- Build on Sea Grant DEIJA efforts, avoid labels
- Higher concentrations, **exposure risks** in some communities with EJ concern, with possible pre-existing concerns
- Need for **meaningful outreach/engagement, early and ongoing**
- **Fish and shellfish consumption**, including seafood safety, subsistence fishing (food security, culture and recreation)

Next steps

- Regional research competitions
 - East Coast 2022
 - NSGO FY22 competition

- <https://seagrant.uconn.edu/research/contaminants-emerging-concern/>



Discussions