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Technical Reachback Project

C1C Stephanie Mallard



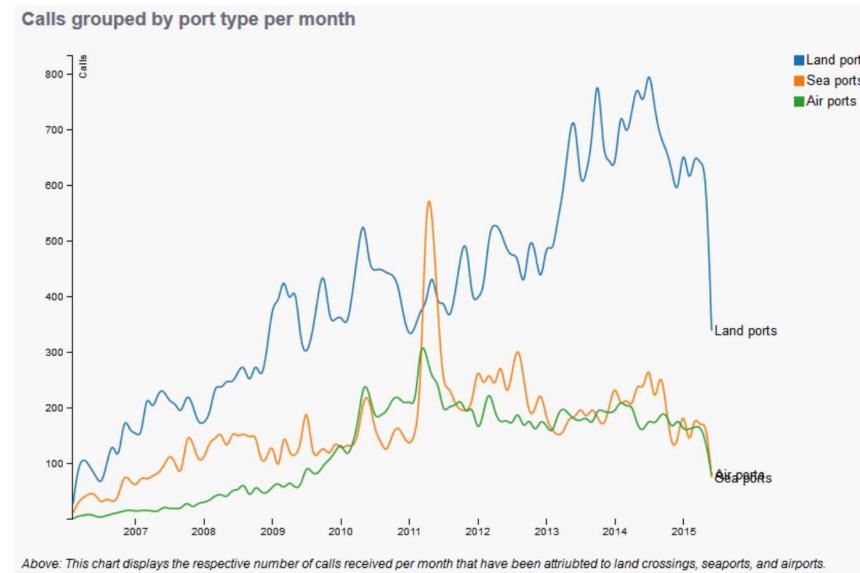
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LSS Calls Log

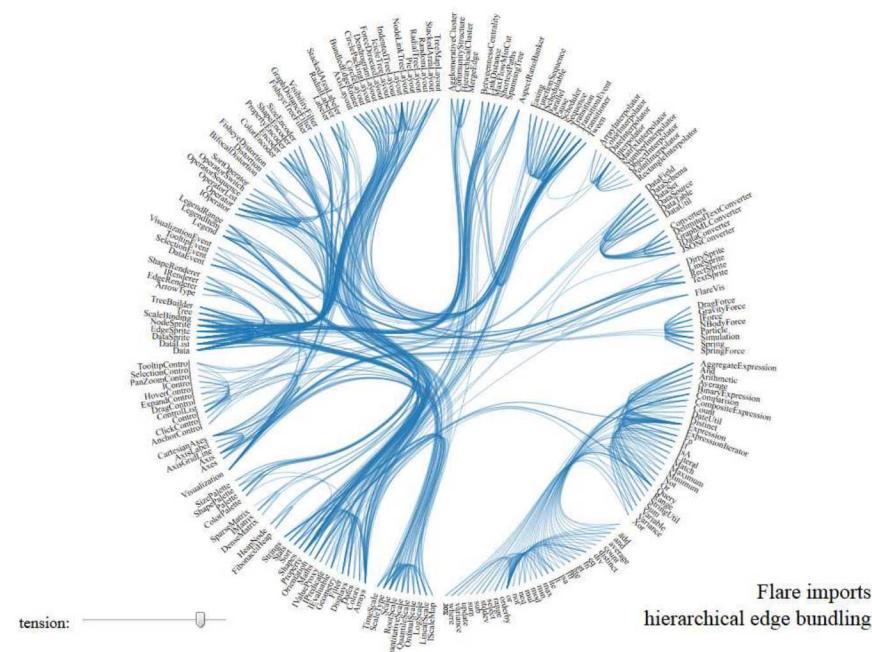
- Database of calls made to an alert center
- Radioactive material on US roadways/airports/seaports
- Search engine
- Information on:
 - Point of entry
 - Radioactive isotope
 - Source (item that set off the alarm)
 - Date/time of call

LSS Trend Report

- Quick reference for looking at long term trends
- Data visualization for:
 - Last 30 days
 - Long term (all time)
- Spike in calls for seaports after Fukushima Daiichi meltdown (2011)



- Data Driven Documents
- JavaScript library for data visualization
 - Interactive graphing
- Easily visualize JSON files



Example D3 Visualization

Potentially Anomalous POEs

Current Graphic

Potentially anomalous activity: Top 10 ports of entry (Based on # of calls)

Location	Recent number of calls		Historic number of calls	
	Last 30 days	90-day average	Inner Quartile Range	
	10	2	1 - 2	
	12	3	1 - 3	
	26	19	2 - 6	
	124	81	1 - 69	
	7	1	1 - 3	
	0	6	1 - 5	
	83	57	23 - 48	
	25	49	3 - 22	
	7	2	1 - 3	
	0	4	19 - 91	

Modified Graphic

Top 10 Potentially Anomalous Ports of Entry

Top 10 ports of entry showing significantly more or less calls than usual. Indicates a change in the number of calls, not necessarily suspicious activity. The red marker is the number of calls over the last 30 days, the black marker is the previous 90 day average, and the dark grey range is the expected range of values. Click on the label to open more detail on the port.



Names of ports and locations have been edited out

Potentially Anomalous Isotopes

Current Graphic

Potentially anomalous activity: Top 10 isotopes (Based on # of calls)

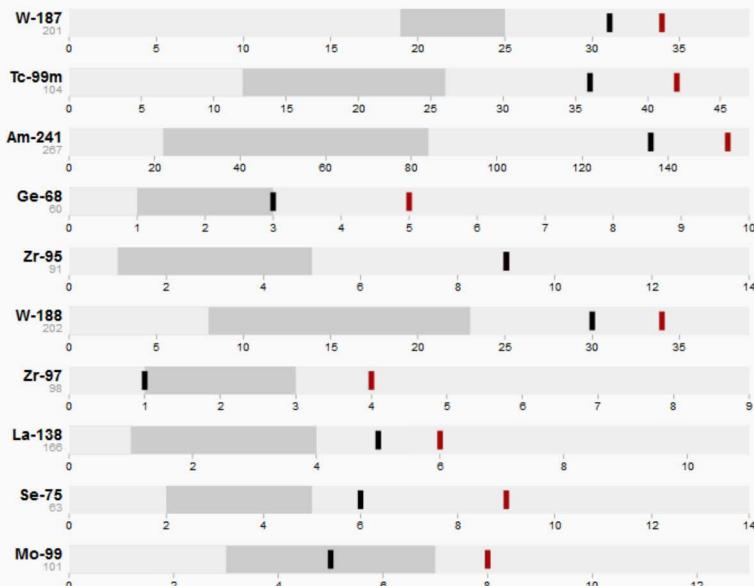
Top 10 isotopes showing significantly more or less calls than usual. Indicates a change in the number of

Isotope	Recent number of calls		Historic number of calls	
	Last 30 days	90-day average	Inner Quartile Range	
C-14	0	2	1 - 2	
Kr-85	0	2	2 - 4	
Am-241	154	136	22 - 84	
Pu-238	0	2	1 - 2	
Co-58	0	2	1 - 2	
Cs-137	97	74	45 - 100	
Ra-223	2	6	1 - 5	
Tc-99m	42	36	12 - 26	
W-187	34	31	19 - 25	
Lu-177	6	12	3 - 10	

Modified Graphic

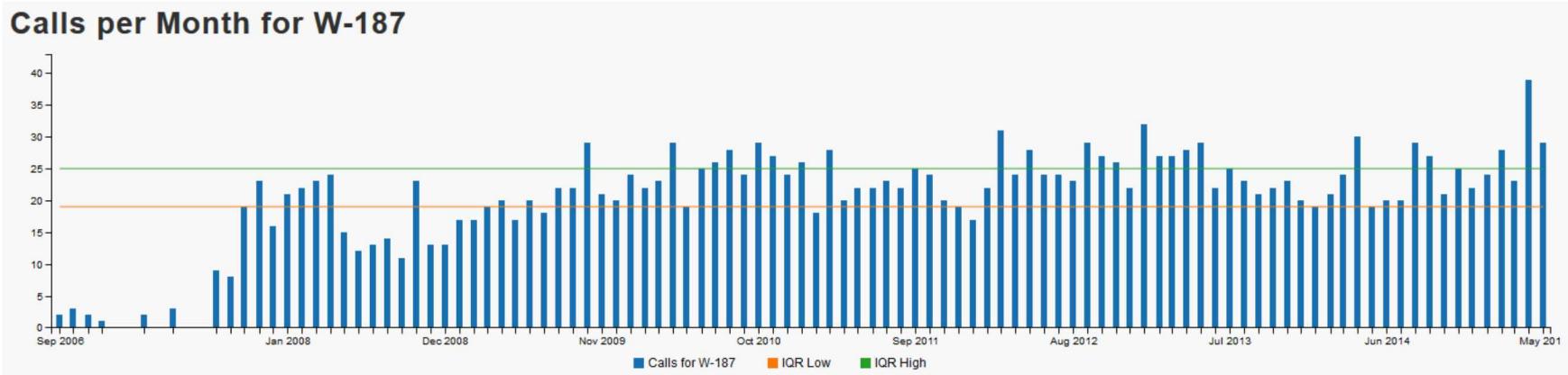
Top 10 Potentially Anomalous Isotopes

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Calls Per Month Bar Chart

Current Graphic



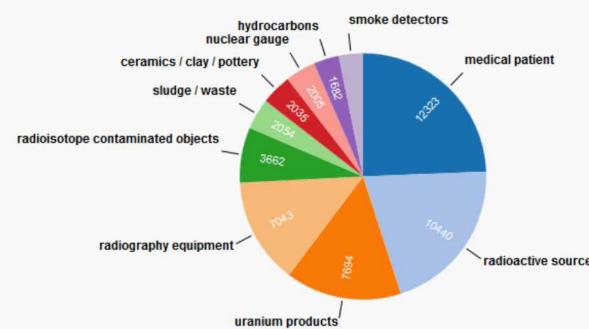
Modified Graphic

Insert new graphic – same information

Top 10 Categories

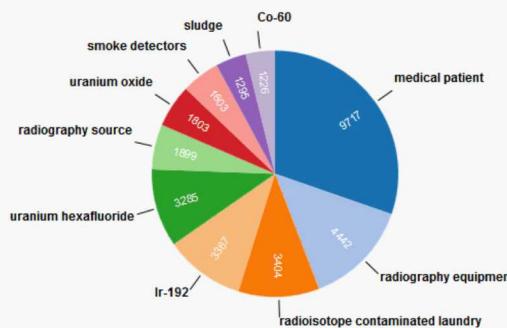
Current Graphic

Top 10 categories



Above: This pie chart displays the top ten categories of materials that have been the source of an alarm at POEs.

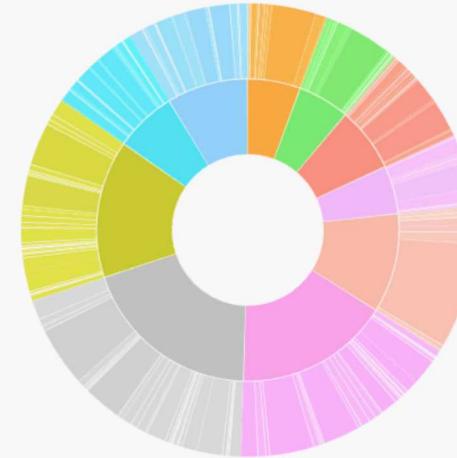
Top 10 subcategories



Above: This pie chart displays the top ten subcategories of materials that have been the source of an alarm at POEs.

Modified Graphic

Top 10 Categories



[View in separate window](#)

Above: This pie chart shows all current data compiled into an interactive graph. Hover over each section to view more information, click the section to expand, and click the center to go back one level.

Instructions

- Hover for information on a section
- Click to expand a section
- Click the center to collapse a section
- The first level is limited to the top 10 categories (by number of calls)

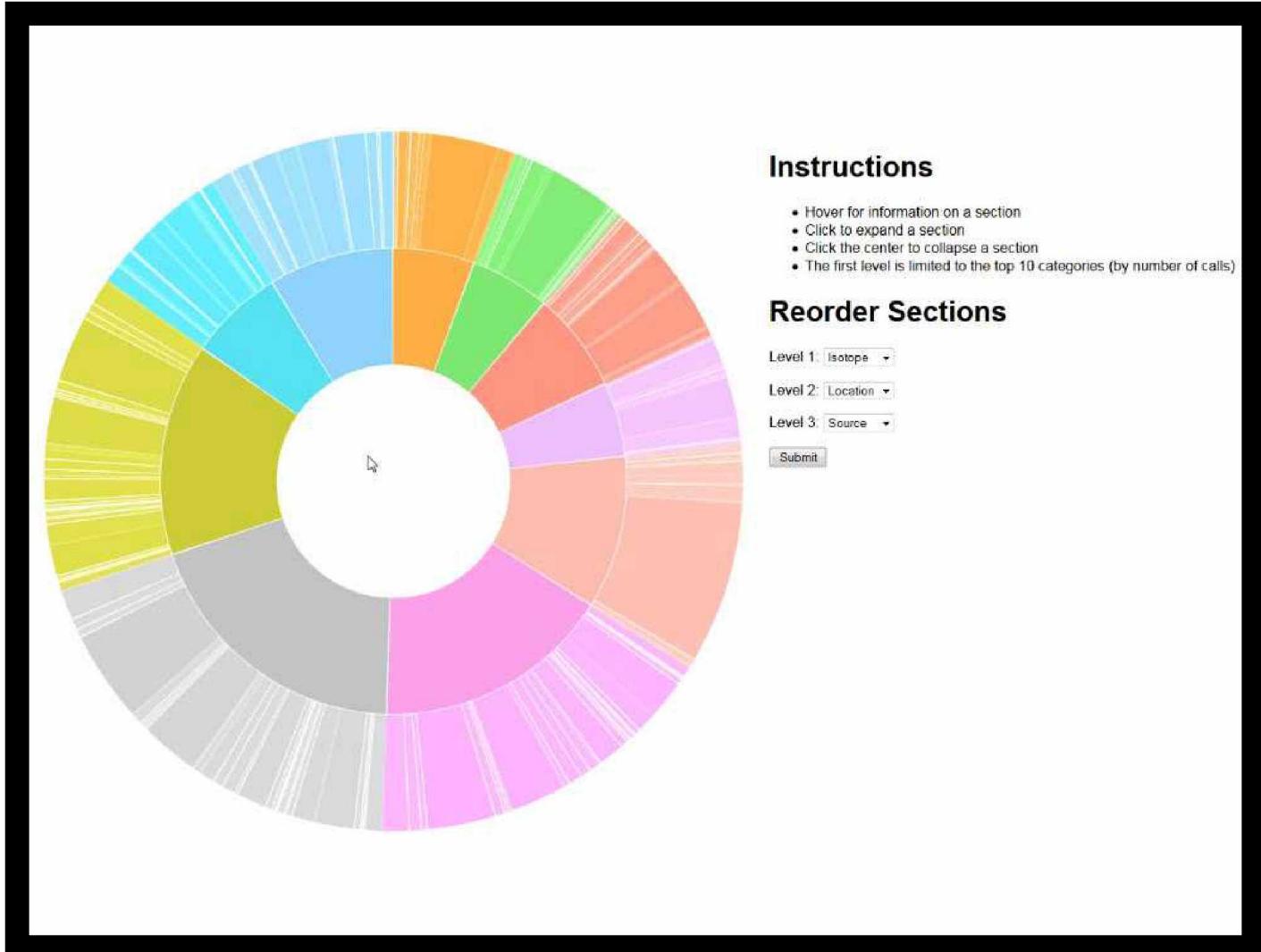
Reorder Sections

Level 1: Isotope

Level 2: Location

Level 3: Source

Demo



Little Man

- Will have additional graphic of man with area of potential radioactivity highlighted for each drug

Rubratope-57	Active ingredient	Cyanocobalamin Co-57	Administration	Oral
Distributed by	Bracco Diagnostics Inc.			
Status	Discontinued in USA (1970-12-21 to 2014-07-29)			
Approvals	NDC 0270-3866-10: 1 bottle with 5 gelatin coated capsules NDC 0270-3866-20: 1 bottle with 10 gelatin coated capsules			
Form	Capsule or Fluid			
Elimination rate & mechanisms	At 48.0 hours after the dose, 50.0% excreted			
(Biological half-life)	Elimination Method urine or stool			
<p>Within 48 hours, 50 to 98% of absorbed cyanocobalamin may appear in the urine. After oral administration, cyanocobalamin is normally bound by intrinsic factor and absorbed by the distal ileum. It is then bound to plasma proteins, stored in the liver, and slowly released when needed to carry out normal cellular metabolic functions. Absorbed cyanocobalamin is ultimately excreted in the urine; any cyanocobalamin not bound by intrinsic factor is excreted in the stool. The major portion is excreted within the first eight hours.</p> <p>Biological Half-life: 48 hours</p>				