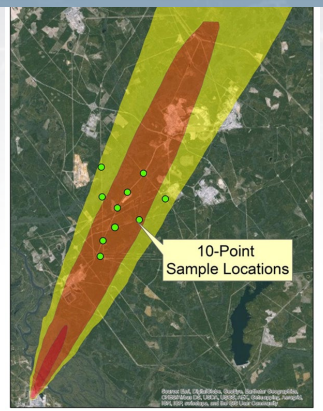
Federal Radiological Monitoring and Assessment Center (FRMAC) Laboratory Analysis Workshop



Analytical Services Program Workshop 2022

SAND2022-16069 PE

Sandia National Laboratories is a multimission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-NA0003525.

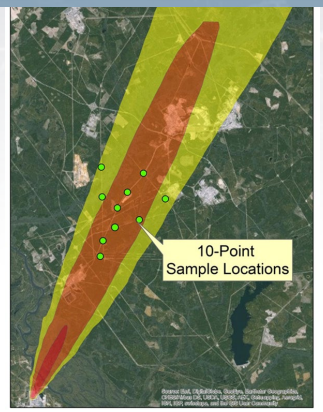
Speaker Introductions

- Sean Fournier – Sandia National Laboratories
- Lynn Jaussi – Nevada National Security Site

Agenda

- A Federal Response to a Nuclear Emergency
- Federal Radiological Monitoring and Assessment Center (FRMAC)
- FRMAC Laboratory Analysis Operations
- What Supporting Laboratories Can Expect
- Participation in Drills and Exercises
- Questions we want to ask you!

A Federal Response to a Nuclear Emergency



U.S. DEPARTMENT OF ENERGY

National Nuclear Security Administration

RESPONSE
RECOVERY
READINESS
TRIBAL
STATE
LOCAL
FRMAC
FEDERAL RADIOLOGICAL MONITORING AND ASSESSMENT CENTER

Sandia National Laboratories

Lawrence Livermore National Laboratory

NEVADA NATIONAL SECURITY SITE
NNSS
Managed and operated by
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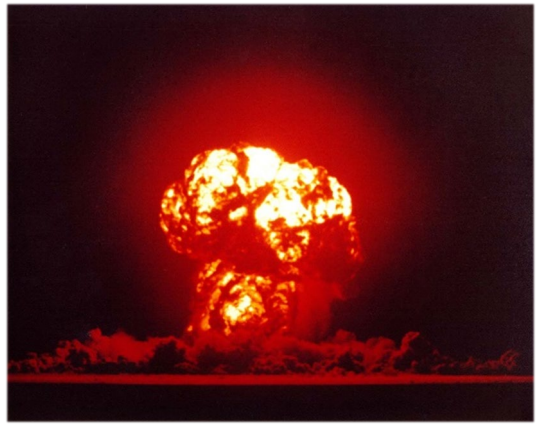
A Federal Response to a Nuclear Emergency

- Nuclear Weapon
- Radiological Dispersal Device
- Nuclear Power Plant Release (large scale)
- **Any** release or potential release of radiological material that activates the Consequence Management Program at NNSA



Consequence Management Mission

The mission of the National Nuclear Security Administration's Consequence Management Program is to reduce casualties and protect lives, property, and the environment in response to a nuclear or radiological incident.

Federal Radiological Monitoring and Assessment Center (FRMAC)

Multi-Agency response effort

- Partners include: DOE, DoD, EPA, FDA, CDC, USDA
- Consequence Management Advanced Command (CMAC)
- Consequence Management Response Team (CMRT)
- Consequence Management Home Team (CMHT)
- Off-location assets at the national laboratories

MISSION: Assist Federal, State, Tribal, and Local authorities by providing timely, high-quality predictions, measurements, analyses and assessments to promote efficient and effective emergency response for protection of the public and the environment from the consequences of nuclear or radiological incidents.

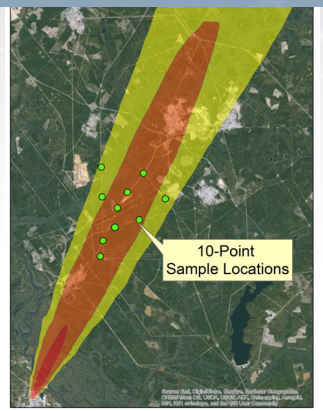
Federal Radiological Monitoring and Assessment Center (FRMAC)

Divisions of FRMAC

- Sampling and Monitoring
- Assessment
- Health & Safety
- Support
- Liaison
- Laboratory Analysis

FRMAC in Action
Southern Exposure 2015 – Full Scale Nuclear Power Plant Exercise

FRMAC Laboratory Analysis Operations and What Supporting Analysis Laboratories can Expect



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Outline

- FRMAC Laboratory Analysis Process
- Typical FRMAC Samples
- What to expect from FRMAC?
- Laboratory Data Reporting Process overview
- Key Take-Away(s)

FRMAC Laboratory Analysis Process

Mobile Labs

Fixed Labs

Analysis Needs, DQO's and Sampling Plans Established

Local Resources

Lab Assets Notified

Reachback

Samples Received and Logged at Hotline/Sample Control; COC established

Analysis Request Completed and Samples Shipped to Labs

Labs complete analysis and report results

Receive, review and validate laboratory results

Data Deliverables

Data available for Assessment

COSMOS Workflow Tracking

Timeline = Days to Weeks

Sample Receipt Hotline - Cobalt Magnet 2019 - Cocoa Beach, FL

Sample Receipt of Soils from Fukushima (Lab Analysis and RAP-3) @ Savanah River Site

FAL/EPA MERL Interoperability drill - 2015, Las Vegas, NV

Lab Analysis management at FRMAC - Northern Lights 2016 - Minnesota

Phases of the response

Early Phase

Source term confirmation
Evacuate or Shelter?
Responder Safety/Exclusion Zone
Extent of release

Intermediate Phase

Relocation or Return?
Commercial product embargos
Long-term impact assessments

Late Phase

Recovery of impacted regions
Chronic or long-term dose effects
Regulatory cleanup requirements
Long-term stewardship

DOE Led FRMAC

Coordinates federal assets under Unified Command to support the State/Local Jurisdiction with early phase emergency management

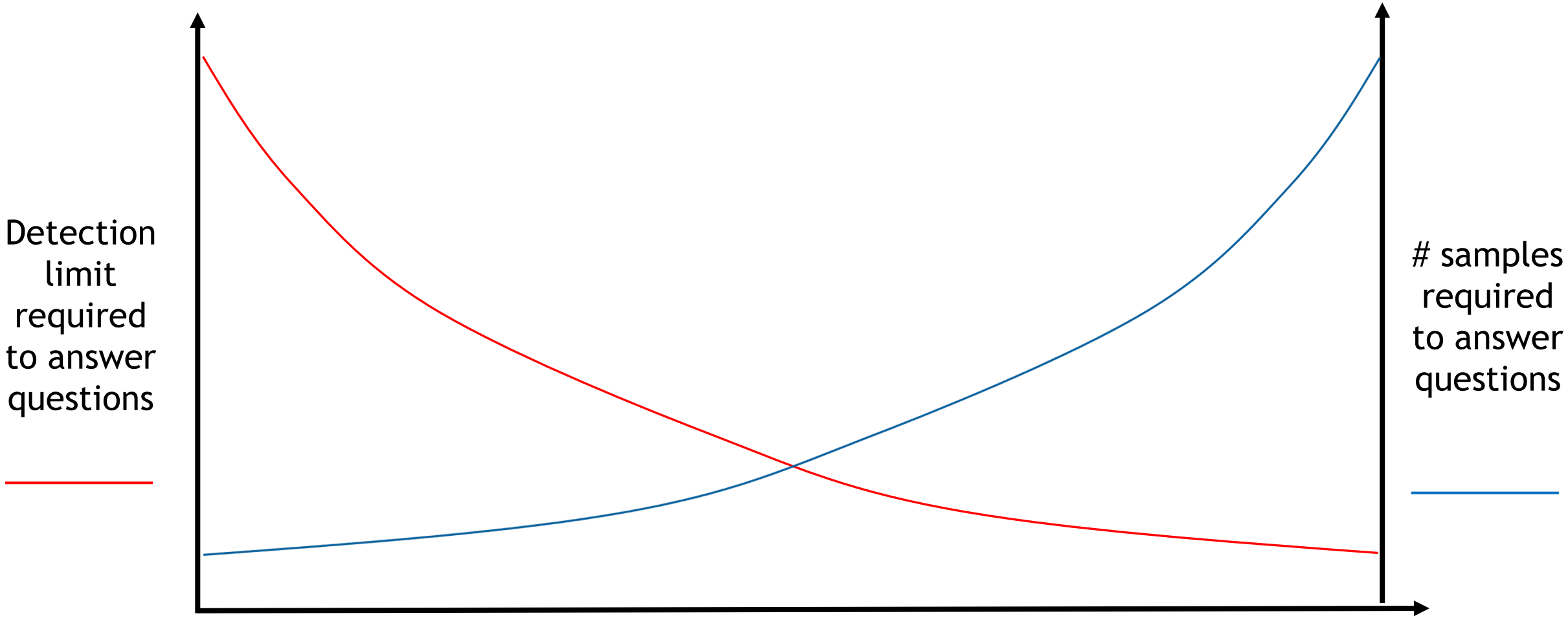
Transition Period

DOE and EPA collaborate on event transition plan that best supports the State, Local, Tribal, and Territorial authorities

EPA Led FRMAC

Coordinates federal assets under Unified Command to support intermediate consequence management and long-term remediation efforts

The Laboratory Analysis Challenge



Typical Samples Collected by the FRMAC

- Swipes & Smears – health and safety, general deposition assessment
- Air Filters – health and safety, resuspension analysis
  a) 2 in diameter low-volume
  b) 4 in diameter high-volume
  c) Cartridges for Iodine capture

- Environmental – Soil, water, vegetation
- Commercial – Food, Agricultural Products, Feed/Forage
- **Ground Deposition** – Evaluation of deposited radioactivity in a given area

**Images are for demonstration only, specific products seen here do not represent an endorsement by DOE*

The Ground Deposition Sample

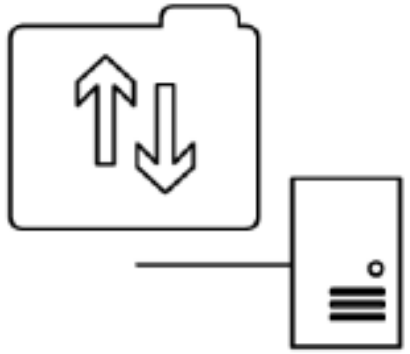
- Collected to estimate radionuclide concentration deposited on the ground surface
- Similar to soil samples, with key differences:
  - Objective to report sample activity/area
  - No separation of non-soil components (rocks, vegetation, organic materials)
  - Labs are asked to report radioactivity for <u>the whole sample</u>

EPA has developed a standardized rapid screening method for gamma spectroscopy and gross alpha/beta of the Ground Deposition samples

Factors in Selecting a Responding Laboratory

- FRMAC experience
- FRMAC Laboratory Analysis Working Group member lab or contractor
- Member of ICLN Laboratory Network?
- Proficiency test performance
- Permits, accreditations, certifications
- Matrix/method capabilities
- Ability to meet Data Quality Objectives (DQO) and Turn-Around-Times (TAT)
- Sample capacity

Laboratory Process Review



Initial Laboratory Contact → Analysis Request Form via Lab Portal → Lab receives samples, performs analysis → Lab posts data to Lab Portal → FRMAC makes QA assessment, gives feedback to lab, imports verified results to RR database

Initial Laboratory Questionnaire

- Laboratory point of contact, physical address, and shipping address
- Radioactivity thresholds
- Analysis capabilities, standard geometries, and standard count times/detection limits

Laboratory Information Summary

Laboratory Name:	Sandia National Laboratories	Contact Name:	Sean D. Fournier
	RPSD	Contact Phone/Fax Number:	505.844.7838
Shipping Address:	1515 Eubank Blvd. SE	Contact Email Address:	sdfourn@sandia.gov
	Albuquerque, NM 87123	Alternate Contact:	Sonoya Shan
	Bldg 1090 MS 1103	Alternate Phone/Fax Number:	505.844.7964
		Alternate Email Address:	tshan@sandia.gov

Please specify the maximum activity levels your laboratory can accept.

	CPM	uCi	mR	Other
Per Sample	5000		(on contact)	
Total	5000		5 (on contact)	

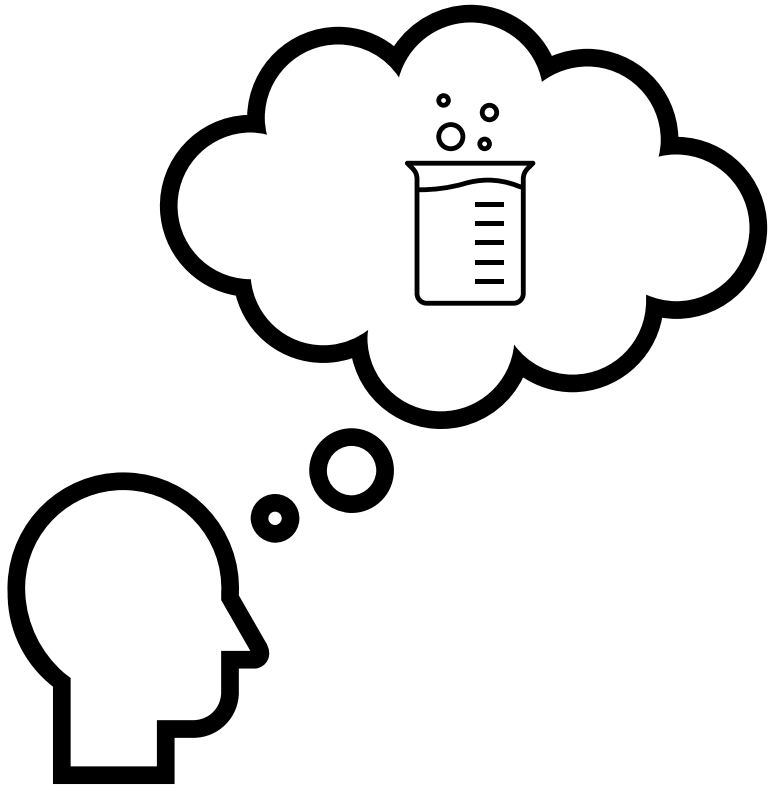
Please specify typical Lc for a 10 minute count.

		Counting Geometry	Am-241	Cs-137	Gross Alpha	Gross Beta	Units	Samples / Day	Expected TAT for first sample
Gamma Spectroscopy	Soil	2" mL Jar	.002	1e-4			µCi/Sample	84	6 hrs
	Air	2/4"	.0005	1e-4			µCi/Sample	84	6 hrs
	Swipes	2"	.0005	1e-4			µCi/Sample	84	6 hrs
	Water	500 mL	.004	1e-4			µCi/L	84	6 hrs
	Vegetation	250 mL Jar	.001	1e-4			µCi/Sample	84	6 hrs
Proportional Counting	Soil	N/A					µCi/Sample		
	Air	2"			2.3e-6	6e-6	µCi/Sample		6hrs
	Swipes	2"			2.3e-6	6e-6	µCi/Sample		6hrs
	Water	N/A					µCi/L		
Radon-compensating Alpha/Beta Counter	Air	2"			2.3e-6	6e-6	µCi/Sample		6hrs
	Swipes	2"			2.3e-6	6e-6	µCi/Sample		6hrs
Liquid Scintillation	Water	15/5 UGXR			2.3e-6	6e-6	µCi/L	2400	6hrs
	Air	18/0 UGXR			2.3e-6	6e-6	µCi/Sample	2400	6hrs
	Swipes	18/0 UGXR			2.3e-6	6e-6	µCi/Sample	2400	6hrs

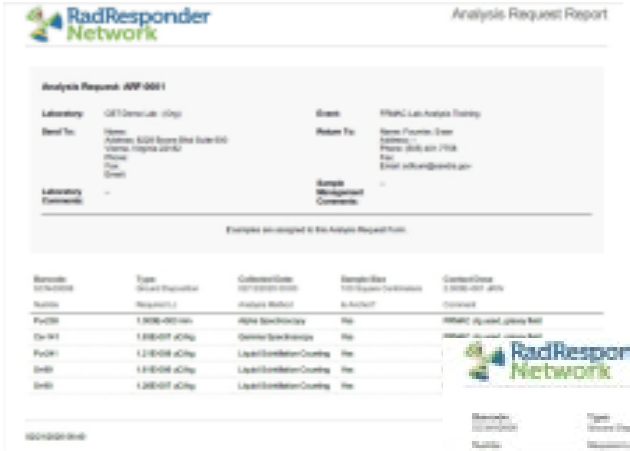
Gather this information ahead of time!

From a radiochemistry perspective, what can your lab provide to FRMAC in an emergency response?

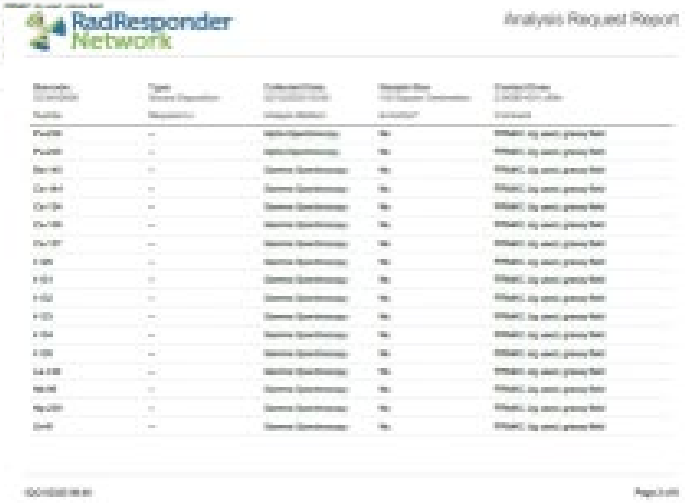
- What equipment/staffing do you have?
  - Can the lab provide 24/7 services?
- What analysis methods are normally run?
- What matrices can you handle?
- What are the rad license limitations?



Analysis Request Form



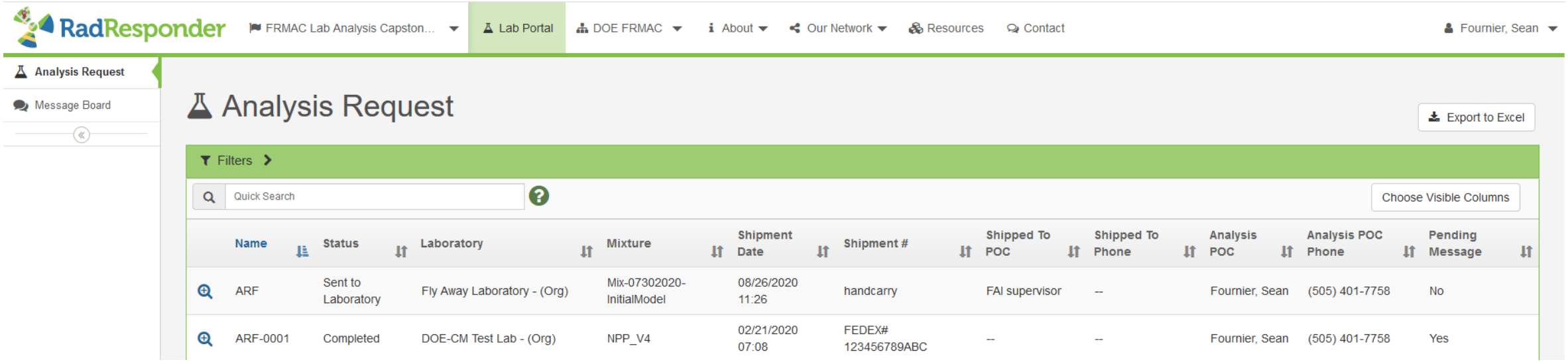
Page 1 Cover Page



Page 2 - ?? Sample/Analyte List

Last Page: Chain of Custody

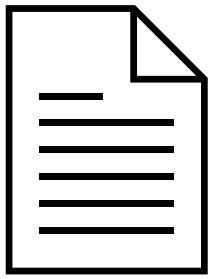
How Labs report data to FRMAC



- CBRNResponder.net Lab Access Portal
- Only see analysis request information sent to their lab
- Post files to website, FRMAC reviews the files and imports the data to the RadResponder database
- Access Electronic Data Deliverable (EDD) file format

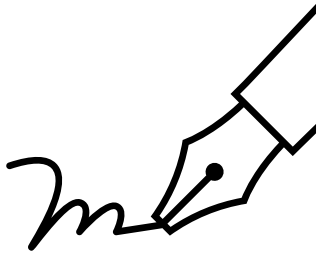
Data Packages/ What FRMAC Requires

At minimum, what documents should you upload?



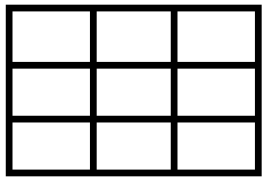
Case Narrative

- Describes what was done to the samples
- Summarizes the QC results for the batch
- Explains any flags or issues encountered with the results



Signed analytical report

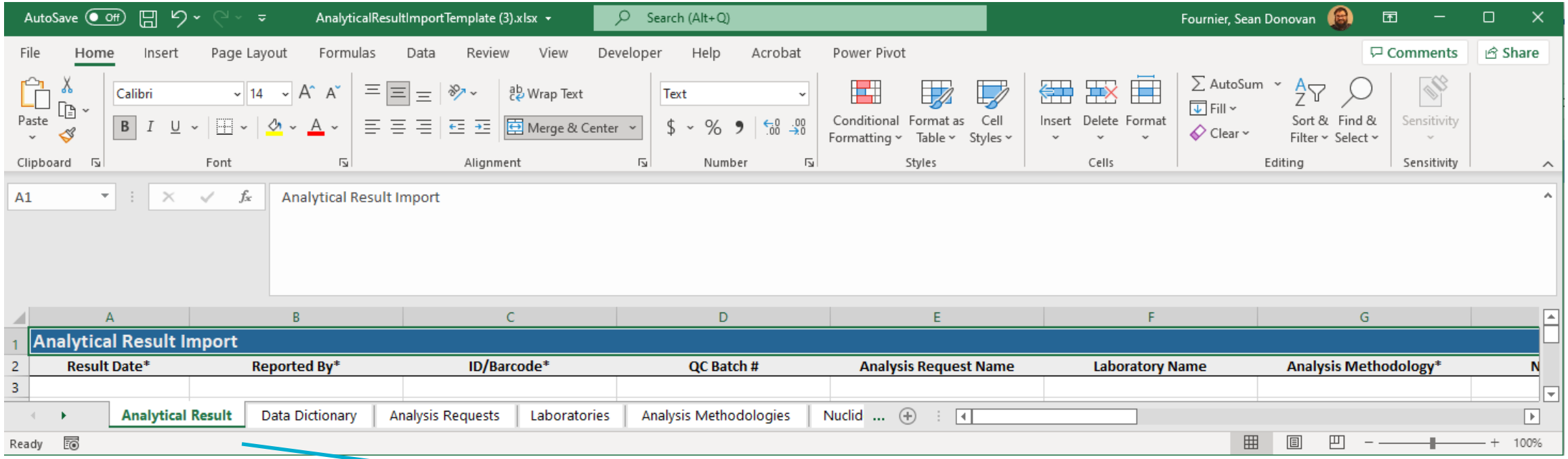
- Shows who did the analysis and what settings were applied to the instrument



Electronic Data Deliverable file used

- This way, FRMAC can re-upload data if necessary

The CBRNResponder Electronic Data Deliverable (EDD) file



The result template has many tabs, the most important is the **Analytical Result** tab, this is where you will put your reported results. We recommend your lab gets a copy of this file now and configures your LIMS to provide data in a convenient format to paste into this file. The more practice you get with this step of data reporting, the more smoothly the first ARFs will go.

Electronic Data Deliverable Fields

- **Result Date** – this is the date/time the results are decay corrected to. On the ARF, the sample collection date/time should match this.

  ***Note**: Be aware that the date/time on the ARF is in the time zone of the event and conversions may need to be made at the lab to correct them. Contact FRMAC with questions.*

- **Reported By** – This is the name of the person reporting the results on the Lab Portal and serves as the point of contact for questions related to the analysis

- **ID/Barcode -** This is the sample control number that FRMAC put on the samples, this is **NOT** the lab-generated sample ID that may have been created.

Analytical Result Import			
Result Date*	Reported By*	ID/Barcode*	QC Batch #
9/26/22 9:31 AM	Reese, Robert	SCF-987656	GAMMA-29633
9/26/22 9:31 AM	Reese, Robert	SCF-987656	GAMMA-29633
9/26/22 9:31 AM	Reese, Robert	SCF-987656	GAMMA-29633
9/26/22 9:32 AM	Reese, Robert	SCF-987657	GAMMA-29634
9/26/22 9:32 AM	Reese, Robert	SCF-987657	GAMMA-29634
9/26/22 9:32 AM	Reese, Robert	SCF-987657	GAMMA-29634
9/26/22 9:32 AM	Reese, Robert	SCF-987657	GAMMA-29634

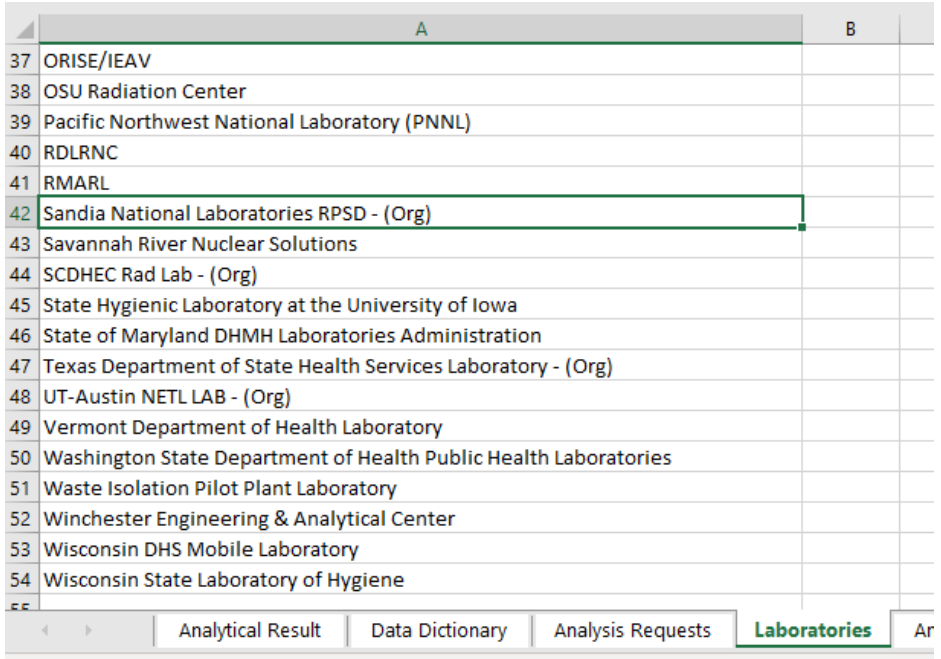
Electronic Data Deliverable Fields

- **QC Batch ID** – This is the lab-generated identifier that shows which samples were batched together at the lab. Every lab will have a different system for identifying batches. This helps the data reviewers find the right portions of the data package.

- **Analysis Request Name** – This is the ARF ID on the analysis request, this ties the result data to the ARF and sample in the system

- **Laboratory Name** – this is the name of your laboratory in CBRNResponder. Copy/paste the lab name from the list located in the reference tab called “Laboratories”

QC Batch #	Analysis Request Name	Laboratory Name
GAMMA-29633	ARF-987654	Sandia National Laboratories RPSD - (Org)
GAMMA-29633	ARF-987654	Sandia National Laboratories RPSD - (Org)
GAMMA-29633	ARF-987654	Sandia National Laboratories RPSD - (Org)
GAMMA-29634	ARF-987654	Sandia National Laboratories RPSD - (Org)
GAMMA-29634	ARF-987654	Sandia National Laboratories RPSD - (Org)
GAMMA-29634	ARF-987654	Sandia National Laboratories RPSD - (Org)
GAMMA-29634	ARF-987654	Sandia National Laboratories RPSD - (Org)



Electronic Data Deliverable Fields

- **Analysis Methodology** – This is the analysis method from the ARF paperwork pertaining to the analysis.

- **Nuclide Type** – This is the name of the analyte for the result, be sure to match the syntax in the Nuclide Types tab on the EDD template

- **Result** – This is the numerical result for the analyte. Report a numerical result weather positive, negative, or zero. If the result is below the critical level, report that numeric result. **Do not** use qualifying statements like "<Lc" or "Not Detected"

- **Result Unit** – This is the radioactivity concentration unit for the numerical result, be sure to match the requested units indicated on the Analysis Requirement section on the ARF. It is usually safe to default to uCi as the unit.

Analysis Methodology*	Nuclide Type*	Result*	Result Unit*
Gamma Spectroscopy	Am-241	0.261351351	uCi
Gamma Spectroscopy	Co-60	0.000804324	uCi
Gamma Spectroscopy	Cs-137	0.013781081	uCi
Gamma Spectroscopy	Am-241	1.129313929	uCi/kg
Gamma Spectroscopy	Co-60	0.012266112	uCi/kg
Gamma Spectroscopy	Cs-137	0.20024948	uCi/kg
Gamma Spectroscopy	K-40	0.007808732	uCi/kg

Electronic Data Deliverable Fields

- **Uncertainty/Error**- This is the **total propagated uncertainty (TPU)** for the analytical result

- **Coverage Factor**- This is the quoted sigma level (i.e. 1σ or 2σ) for the result (do not include a sigma character and decimals are accepted)

- **MDA/MDC** - This is the minimum detectable activity or concentration of the measurement determined by the Currie method with a 5% false positive/negative rate (95% confidence interval). If your lab uses a different approach, note this in the comment field and the case narrative.

Uncertainty/Error	Coverage Factor	MDA/MDC
0.052302703	2.00E+00	0.001310811
9.61081E-05	2.00E+00	2.00811E-05
0.001669189	2.00E+00	5.75676E-05
0.226029106	2.00E+00	0.009480249
0.001187027	2.00E+00	0.000177963
0.024133056	2.00E+00	0.000691892
0.001716424	2.00E+00	0.000568815

Electronic Data Deliverable Fields

- **Measured Critical Level** – This is the measurement critical level, in the same units as the result as determined by the Currie method with a 5% false positive/negative rate (95% confidence interval). If your lab uses a different approach, note this in the comment field and the case narrative.

- **Quantity as Analyzed** – This is the sample size, measured by the lab, used in the determination of the activity concentration.

- **Quantity Unit** – This is the unit for the numeric quantity field

Measured Critical Level	Quantity as Analyzed	Quantity Unit
0.000654054	1	
7.91892E-06	1	
2.75676E-05	1	
0.004731809	0.325	kilograms
7.70062E-05	0.325	kilograms
0.000338462	0.325	kilograms
0.000175468	0.325	kilograms

Electronic Data Deliverable Fields

- **Wet or Dry?**- This indicates if the sample was dried in an oven prior to analysis. In some cases FRMAC may request that samples be analyzed before drying and after drying.

- **Lab Qualifier**- This field relates to the QA status of the results, refer to the Lab Qualifiers reference tab for a list of options.

- **Comment**- This is an open text field for the lab to use to make a comment on the result. Be sure to explain any reasoning behind choosing Estimated or Rejected as the Lab Qualifier.

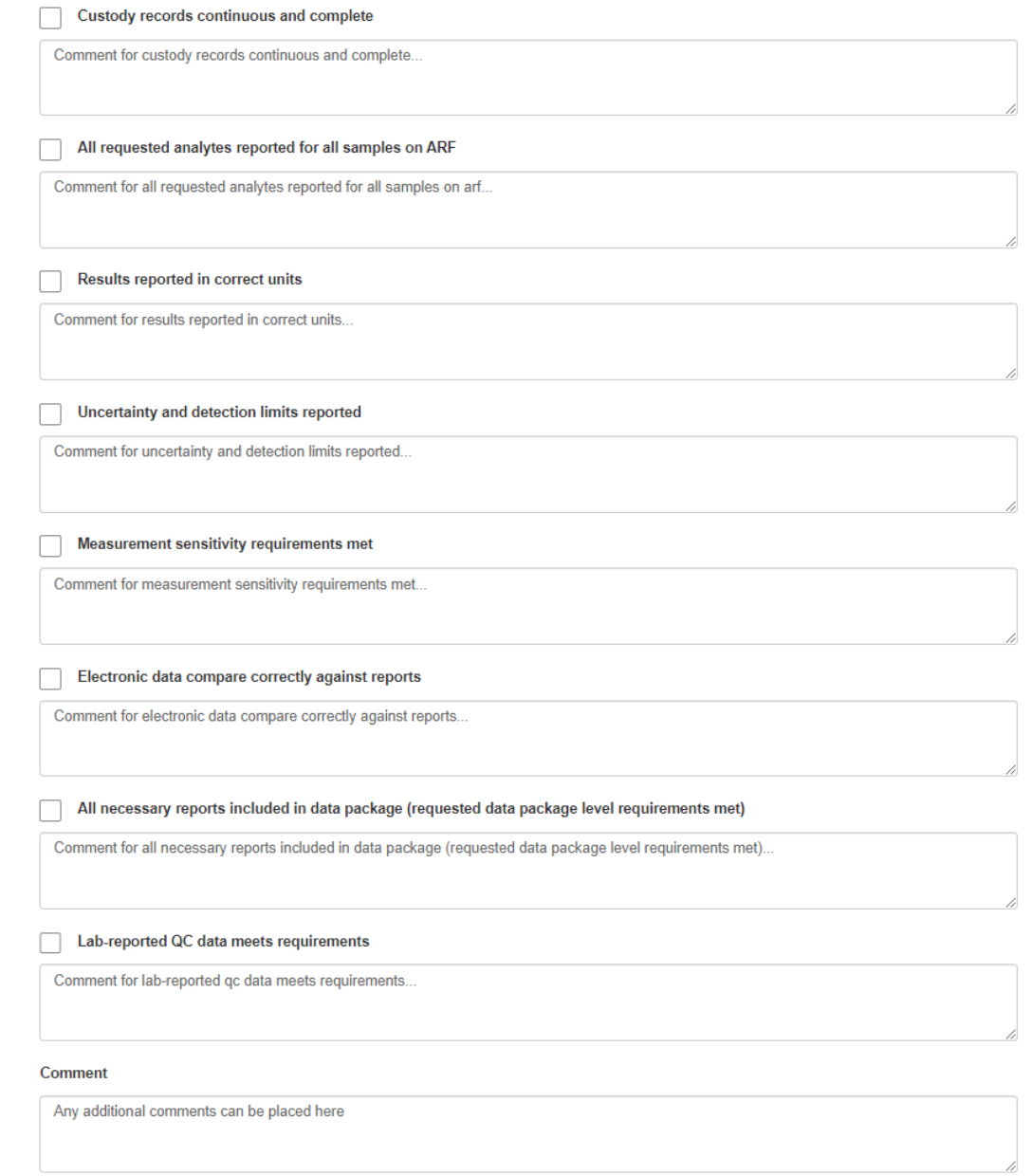
- **Upload Type** - This field is used by FRMAC to make corrections to data already imported to the database, do not use.

Wet or Dry?	Lab Qualifier	Comment	Upload Type
	Approved		
	Approved		
	Approved		
Wet	Approved		
Wet	Approved		
Wet	Approved		
Wet	Approved		

Lab Qualifiers	
Approved	Result is approved by the lab and has a numeric result above the measured critical level
Estimated	Result is approved by the lab but has issues that may cause inaccuracies or biases in the result
Less Than Lc	Result is approved by the lab but the numeric result is below the measured critical level
Rejected	Result is rejected by the lab and the reason is noted in the comment field

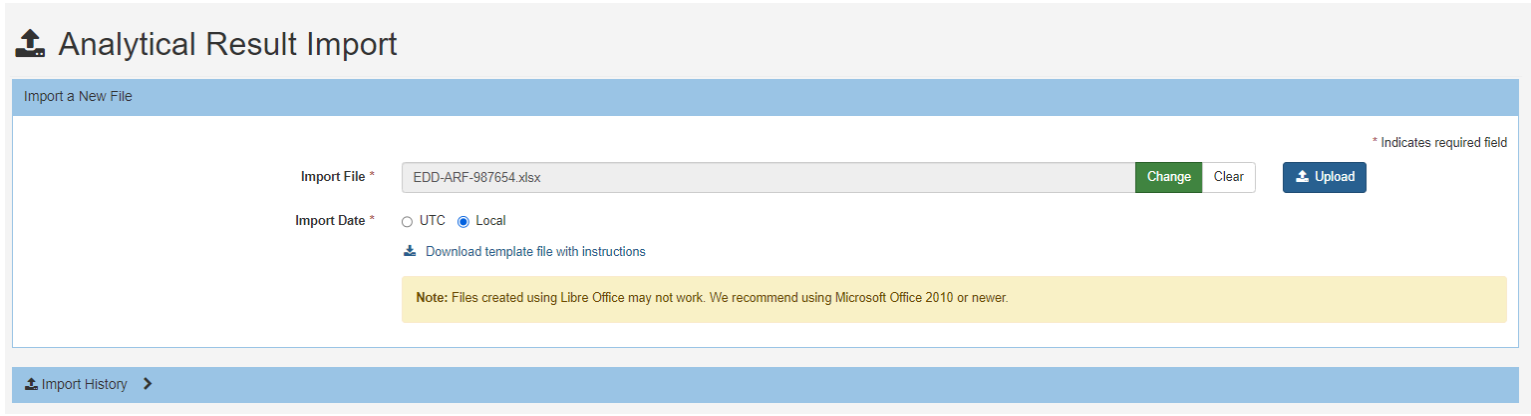
What does the FRMAC QA Specialist do?

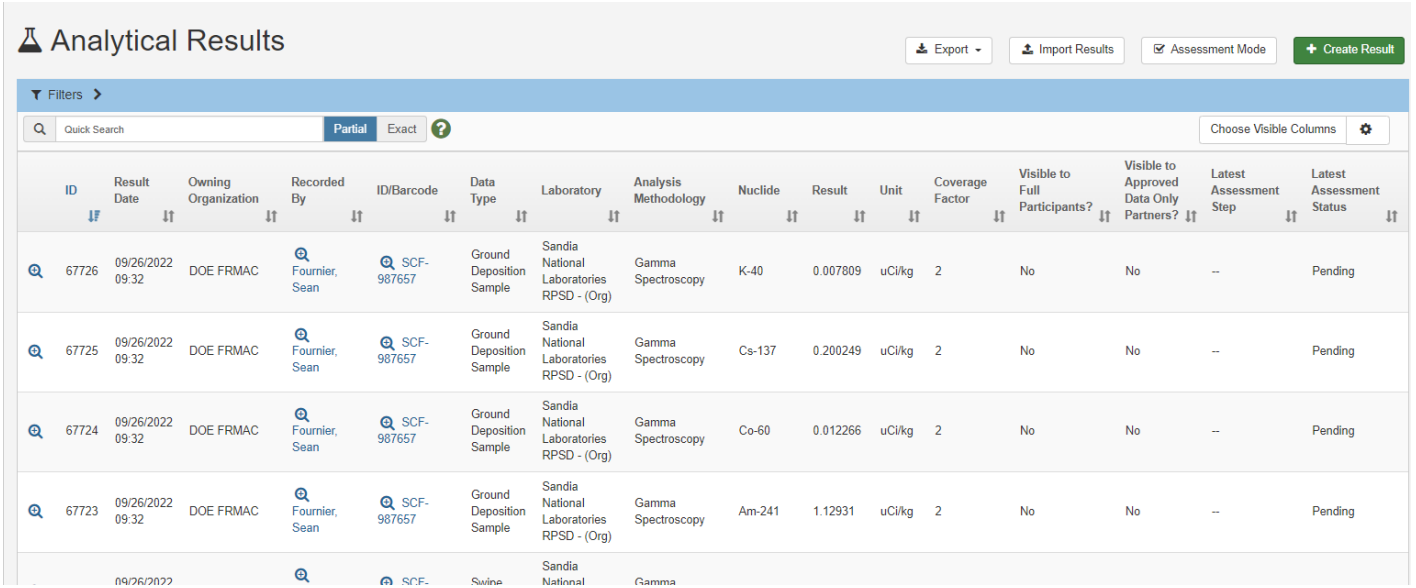
- Check that COC records are complete
- Check that all samples have been analyzed to the specifications on the ARF
- Check that the count time and/or Lc requirements were met
- Check that the data package is complete
- Check QA/QC samples run by the lab passed specifications (that the lab normally uses)
- Provides any notes/comments on this Data Verification Form



Import of EDD to CBRNResponder Analytical Results Database

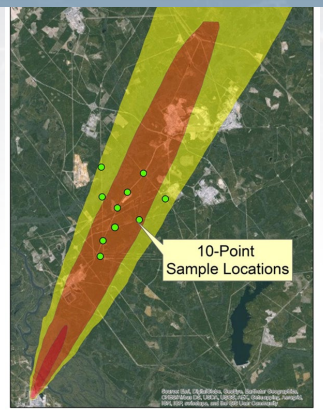
- EDD files are carefully reviewed and imported to the database that does further syntax checking
- Minor issues in syntax may be corrected by the QA specialist who will repost the file to the ARF documents page
- Major issues may require communication with your laboratory to resolve
- Once in the system, FRMAC scientists use the data to respond to important requests for information (RFIs)





ID	Result Date	Owning Organization	Recorded By	ID/Barcode	Data Type	Laboratory	Analysis Methodology	Nuclide	Result	Unit	Coverage Factor	Visible to Full Participants?	Visible to Approved Data Only Partners?	Latest Assessment Step	Latest Assessment Status
67726	09/26/2022 09:32	DOE FRMAC	Fournier, Sean	SCF-987657	Ground Deposition Sample	Sandia National Laboratories RPSD - (Org)	Gamma Spectroscopy	K-40	0.007809	uCi/kg	2	No	No	--	Pending
67725	09/26/2022 09:32	DOE FRMAC	Fournier, Sean	SCF-987657	Ground Deposition Sample	Sandia National Laboratories RPSD - (Org)	Gamma Spectroscopy	Cs-137	0.200249	uCi/kg	2	No	No	--	Pending
67724	09/26/2022 09:32	DOE FRMAC	Fournier, Sean	SCF-987657	Ground Deposition Sample	Sandia National Laboratories RPSD - (Org)	Gamma Spectroscopy	Co-60	0.012266	uCi/kg	2	No	No	--	Pending
67723	09/26/2022 09:32	DOE FRMAC	Fournier, Sean	SCF-987657	Ground Deposition Sample	Sandia National Laboratories RPSD - (Org)	Gamma Spectroscopy	Am-241	1.12931	uCi/kg	2	No	No	--	Pending

Participation in Drills and Exercises



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RESPONSE RECOVERY READINESS
TRIBAL STATE LOCAL FRMAC
FEDERAL RADIOLOGICAL MONITORING AND ASSESSMENT CENTER

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Importance of Drills and Exercises

Drills and Exercises:

- Help train personnel and condition them to react in a specified, directed, organized, consistent and efficient manner.
- Familiarizes and prepares Responders with probable and potential real world events.

Typical Scenarios Exercised, Drilled, and Events Supported

- Nuclear Power Plant Accidents
- Radiological Dispersion Device (RDD) various scenarios
- Nuclear detonations
- NASA space probe launches
- Compromised sources
- **Any** release or potential release of radiological material that activates the Consequence Management Program at NNSA

Drills and Exercises Purpose

- Exercises and drills are planned with a general scenario
  - All planners design various aspects and attributes to meet a set of objectives(to be prepared as best as possible for a real event) and get the most beneficial training for all responders/participants in the time alotted for the exercise.
  - Exercises and drills often contain things that cannot happen or will not happen under a particular scenario, but are included to help train and prepare responders for most any event that may occur.
  - Sometimes failures are deliberately put into the exercise to help responders to know what to do or to seek alternative methods to accomplish the intended response.
- At the end of the exercise, a Hot Wash is conducted to capture what went well, what did not go well, all the gaps in the current process, lessons learned, etc.

A brief history of FRMAC, Real Events and Selected Lab Analysis CM Exercises, Drills, Events 1979-2015

1979 (Mar 28)

- Three Mile Island Accident
  - FRMAC concept established as a result

1985 (Nov)

- FRMAC officially comes into existence)

1986 (Apr 26)

- Chernobyl Power Plant Accident

2006

- Southern Crossing exercise
  - RDD Scenario
  - 24 hour operations
  - 350+ samples for further analysis received and logged into database

2007

- Topoff 4 exercise
  - Coordinated Radiological Dispersal Device (RDD) detonations in 3 geographically disperse locations
  - No Live Rad Samples

2009

- Empire '09 exercise
  - Immediate response to RDD incident

2011 (Mar 11)

- Fukushima Daiichi Nuclear Power Plant accident
  - Consequence Management responds in-country and from the home team

2013

- ICLN Rad IND exercise

2014-2015

- ICLN Full Scale exercise
- Tracer Capstone

A Brief History of Lab Analysis CM Exercises, Drills, Events and Studies 2015 to today and Expected Future Events

2015 (July)

- Southern Exposure
  - NPP (S.C.)
  - No live rad samples
  - Not LA focused

2016 (Oct)

- Northern Lights
  - NPP (MN)
  - 1st major exercise with full LA play; live rad samples; 14 total labs in play
  - Gamma analyses of soil, water and air filters
  - 210 Total samples prepared; 75 spiked

2018 (Oct)

- CM FFP Study
  - Follow on to NL'16
  - 13 Labs
  - AF and Soil gamma analysis over 30 days

2018 (Nov)

- Wolsey Fire Event (So Cal.)
  - Ground Dep Samples and In Situ g-spectra Collected and Analyzed
  - RFI: "Is any rad present?"
  - That's a loaded and difficult questions to answer

2019 (Feb)

- Cobalt Magnet '19
  - 'Launch Anomaly' at KSC FL involving MMRTG (Pu-238)
  - No Live Rad Samples

2019 (May-June)

- Harborview R/T (WA)
- Cs-137 blood irradiator source indoor release
- Piketon, OH
- Public perception of contamination, DOE responds

2020 - 2021 Zombie Apocalypse

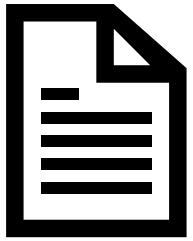
2022 (May)

- Cobalt Magnet '~~20~~, '~~21~~, '22 (TX)
  - Search to CM
  - CM play compressed; LA minor role
  - 2 live rad samples for onsite lab play
  - 20 live rad samples for CDC play

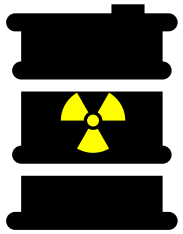
2025

- CM '25
  - Tentative NPP (MI)
  - Lab Focus??
  - Live Rad Samples??

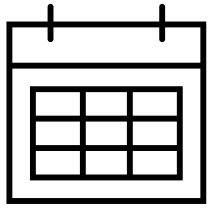
Plan ahead to respond to an emergency – What your Laboratory can do <u>today</u> to prepare



Create emergency response standard operating procedures (SOPs) that allow more flexibility than routine operations. Document standard matrices, geometries, count times and their detection limits.



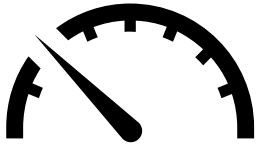
Create a radioactive and mixed waste handling process, a waste addition log, and identify potential waste storage areas in and around your lab. Retaining leftover sample fractions will likely be required.



Work with staff to determine who may be available to work flexible schedules for 24 hour lab operations.

"*A good plan today is better than a perfect plan tomorrow*"
– General George S. Patton

Implement modern rapid radiochemical methods to support emergency response and plan to generate data in the RadResponder EDD format.



Create a plan for more stringent contamination monitoring during emergency response operations. Samples will likely have more radioactivity than normal environmental samples.

Obtain USDA Permits to receive domestic and foreign soil samples.

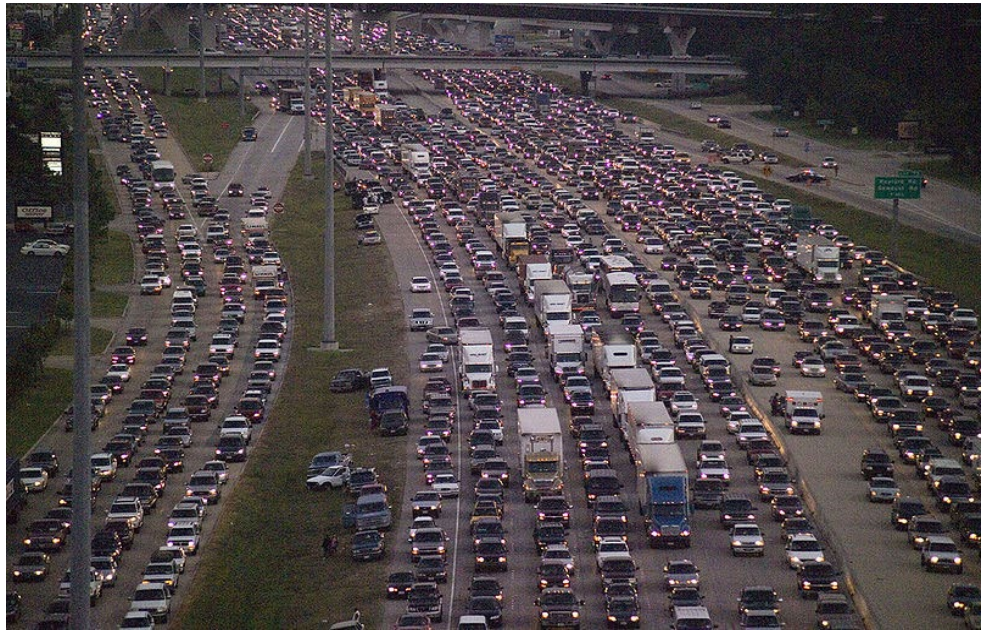
Bottom Line

If Sample Control and Laboratory Analysis has a well established process that is effective, then the Data Assessors, and Decision Makers can be effective.

Ineffective decision-making

Standard lanes of traffic open

Effective decision-making



All lanes of traffic open for evacuation

Questions for you!

How can your lab get involved?

- Reach out to us:

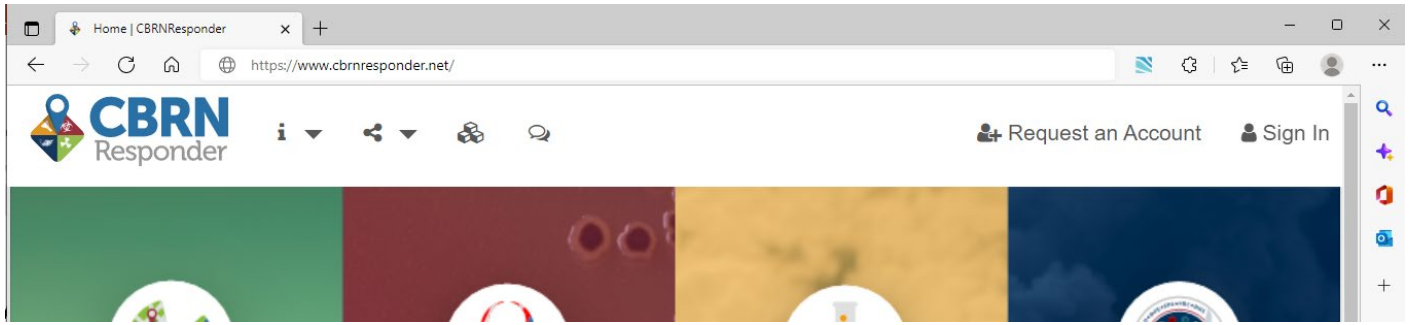
Sean Fournier
Sandia National Laboratories
sdfourn@sandia.gov
(505)844-7838

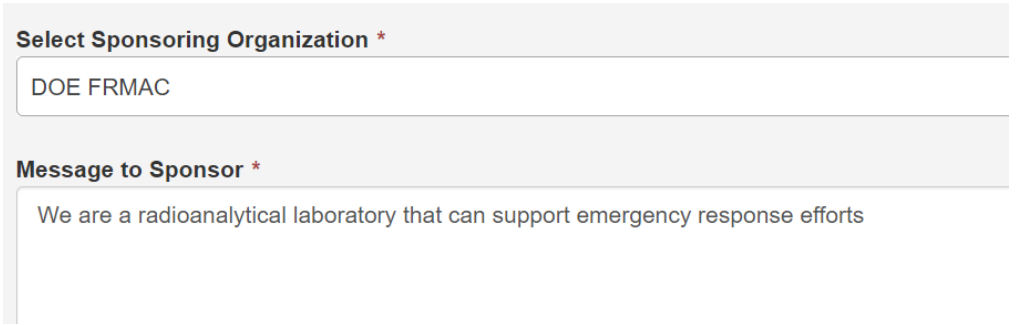
Lynn Jaussi
NNSS
jaussiln@nv.doe.gov
(702)295-7134

- Let us know what your lab is able to do and who your points of contact are, they will be included in our list of laboratory contacts
- What can we do today to help prepare for an emergency?
- What is your appetite for volunteering to participate in intercomparison exercises?
- Is there anything we have not covered that we need to know?

Register for a laboratory organization on CBRNResponder.net

- Go to: https://www.cbrnresponder.net/
- Request an account
- Select "DOE FRMAC" as your sponsoring organization
- Message to sponsor:
  - We are a radioanalytical laboratory that can support emergency response efforts
- Request new organization
- Chainbridge Technologies (the developers of CBRN responder) may reach out to you for more information. Be sure to let them know you are a laboratory and need a laboratory organization.





Questions for you – by show of hands

- Which labs have responded to, or supported, some sort of emergency in the past?
- Which labs have rapid Sr-89/90 analysis methods for environmental and food samples?
- Which labs have the capability to model off-normal calibration geometries for gamma spectroscopy measurements?
- Which labs routinely correct calibrations and measurements for the coincidence summing phenomenon in gamma spectroscopy?
- Which labs are interested in volunteering to support round-robin and intercomparison exercises with fresh fission product materials?

Questions for you

In the intermediate to late response phase FRMAC will need many labs to get involved

- What do we need to do on day 1 of the incident to prepare to have contracts/MOU/SOW/Purchase Order agreements, etc. in place by the time we need to send samples to you?

- What can be done **today** to pre-plan for your involvement in the response?

What effort would it take to configure your LIMS to generate data in the CBRNResponder format?

What can we do on the CBRNResponder software side to make this easier for your lab to do?

Model Scope of Work

FRMAC has a "model scope of work" in the Lab Analysis Manual, appendix F.

https://www.nnss.gov/docs/docs_FRMAC/FRMAC%20Lab%20Analysis%20Manual%202013.pdf

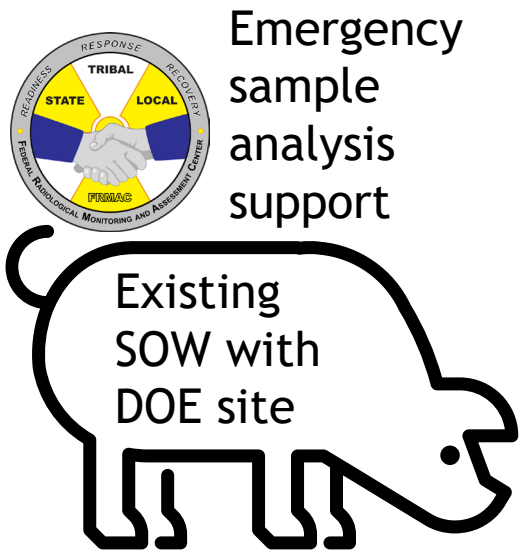
Can we get your feedback about what we should put in there to give us a leg up in establishing official analytical contracts with you during an incident?

Appendix F: Model Scope of Work

Table of Contents

Questions for you

If you have existing contracts with DOE sites, or EPA, how might we "piggyback" on those by establishing clauses for emergencies? How much flexibility can be built in to enable us to get the services we need with the minimal procurement hold up?



Questions for you

What other networks/states do you support for radiological samples?

Integrated Consortium of Laboratory Networks (ICLN)

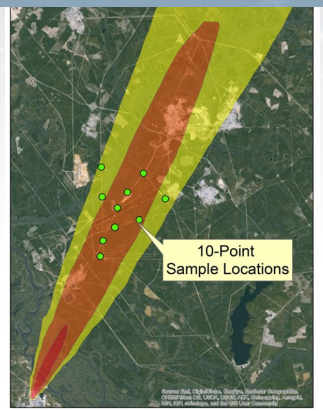
DLN	LRN	NAHLN	NPDN	FERN	ERLN	Vet-LIRN
DoD Laboratory Network	Laboratory Response Network	National Animal Health Laboratory Network	National Plant Diagnostic Network	Food Emergency Response Network	Environmental Response Laboratory Network	Veterinary Laboratory Investigation & Response Network
DoD	**CDC**	**USDA**	**USDA**	**USDA / FDA**	**EPA**	**FDA**

Conference of Radiation Control Program Directors, Inc. Est. 1968

APHL | ASSOCIATION OF PUBLIC HEALTH LABORATORIES

Thank you for your time!

Integrated Consortium of Laboratory Networks (ICLN)



U.S. DEPARTMENT OF ENERGY

National Nuclear Security Administration

RESPONSE
RECOVERY
READINESS
TRIBAL
STATE
LOCAL
FRMAC
FEDERAL RADIOLOGICAL MONITORING AND ASSESSMENT CENTER

Sandia National Laboratories

Lawrence Livermore National Laboratory

NEVADA NATIONAL NNSS SECURITY SITE
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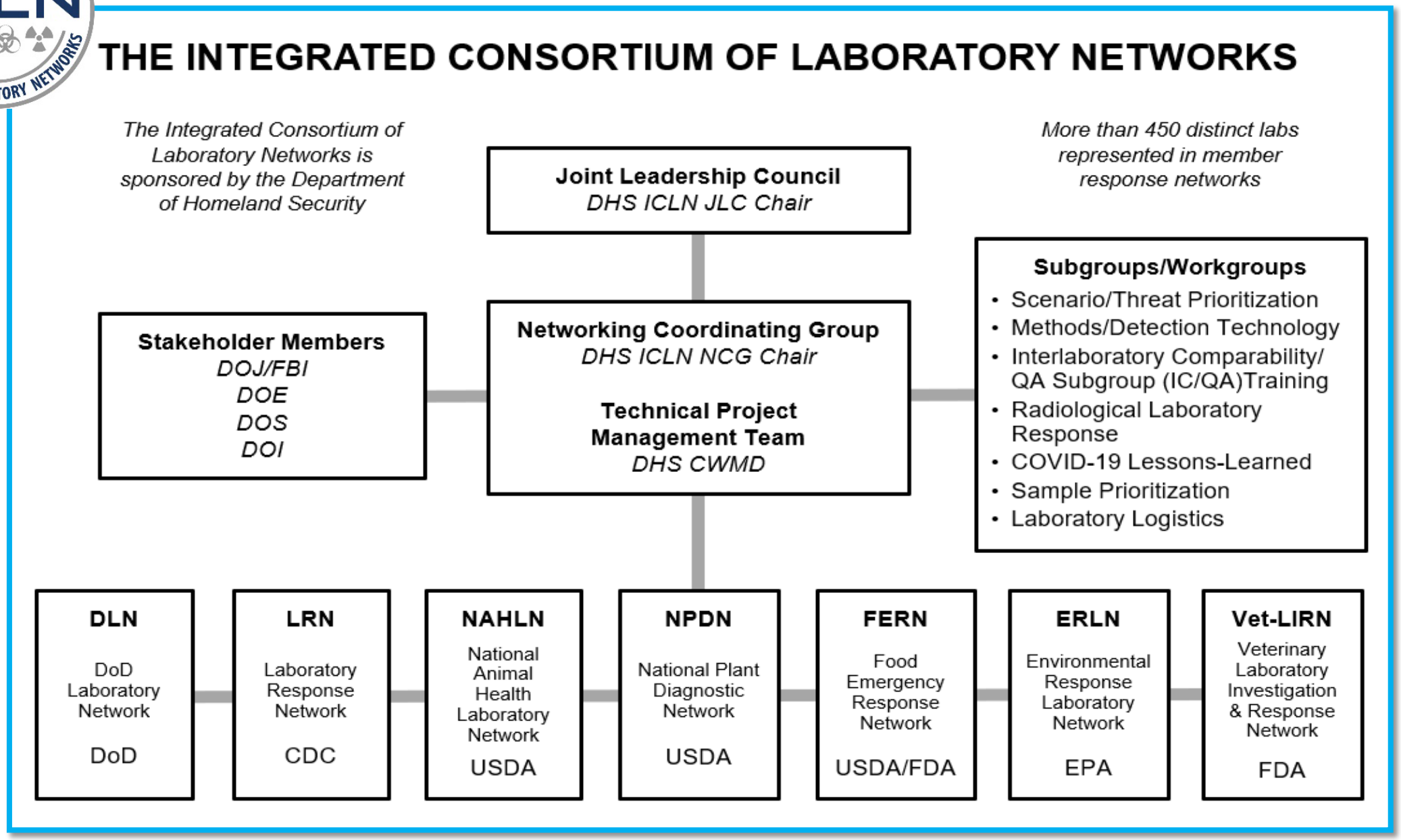
ICLN Organizational Structure



Addressing the Unique Resources of Radiological Laboratories for Emergency Response

Why is this important?
This allows for more strategic preplanning for laboratories to identify and address potential shortages.

- Limited availability;
- Available only from a single or limited number of vendors; and
- Long lead times for acquisition.

Technology

- Instrumentation (purchase/repurpose)

Supplies

- Standards
- Resins
- Reagents

General Preparation

- Permits, licensing
- Advance packaging, shipping, and delivery protocols with overnight carriers
- Staffing plan and WP&C documentation to address 24/7 operations
- Cross-training of staff
- Install IT infrastructure
- Establish formal and informal agreements and accelerated procurement processes
- Plan for acquisition of temporary secure storage space
- Increase instrumentation automation and data-processing steps where possible
- Adopt rapid methods for use during an emergency response
- Develop a plan and **EXERCISE** for long-term operations

- For Information on other ICLN Documents you can visit

https://www.icln.org/subgroups.cfm#radiological-laboratory-response

"Radiological Laboratory Response – Limiting Issues" (May 2009)
"The Tenuous Future of Radiological Laboratories" (Oct 2018)
"Radiological Laboratories – Executive Summary for Senior Executives/Administrators" (Sep 2020)