



Wisconsin State
Laboratory of Hygiene

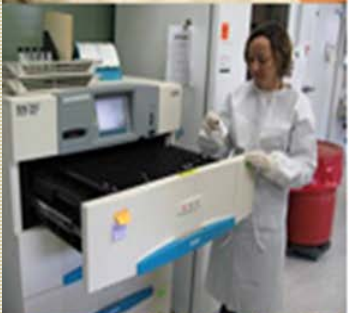
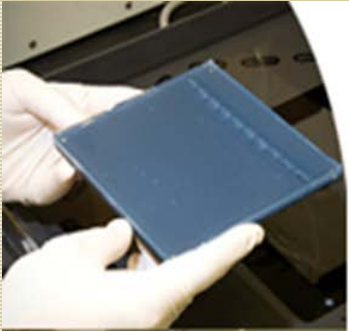
UNIVERSITY OF WISCONSIN-MADISON



One Hand Washes the Other: the LRN-C is Not Just For Preparedness

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The LRN-C

- Focus on clinical testing capability for chemical threat agents/metabolites
 - CDC evolution from “preparedness only” to “dual use encouraged” for assets
- Component of PHEP cooperative agreement
 - Public health lab testing is 1 of 15 PHEP Priorities
 - Support flows from CDC → state PH → labs
 - Funding has declined for several years
- LRN-C benefits not always apparent to public health agencies & other partners
 - Contrast with LRN-B
 - Impacts PHEP support to labs



PHEP Resources are Limited, Why Support the LRN-C??

- Lab failure jeopardizes overall PHEP funding
 - Per PAHPRA PHEP benchmark 4
- LRN support provides:
 - Sophisticated instrumentation
 - Highly trained staff
 - Associated infrastructure
- Outcome: **Many** other potential contributions to our mission-public health & safety
- How might we quantify the additional benefits of LRN-C support?





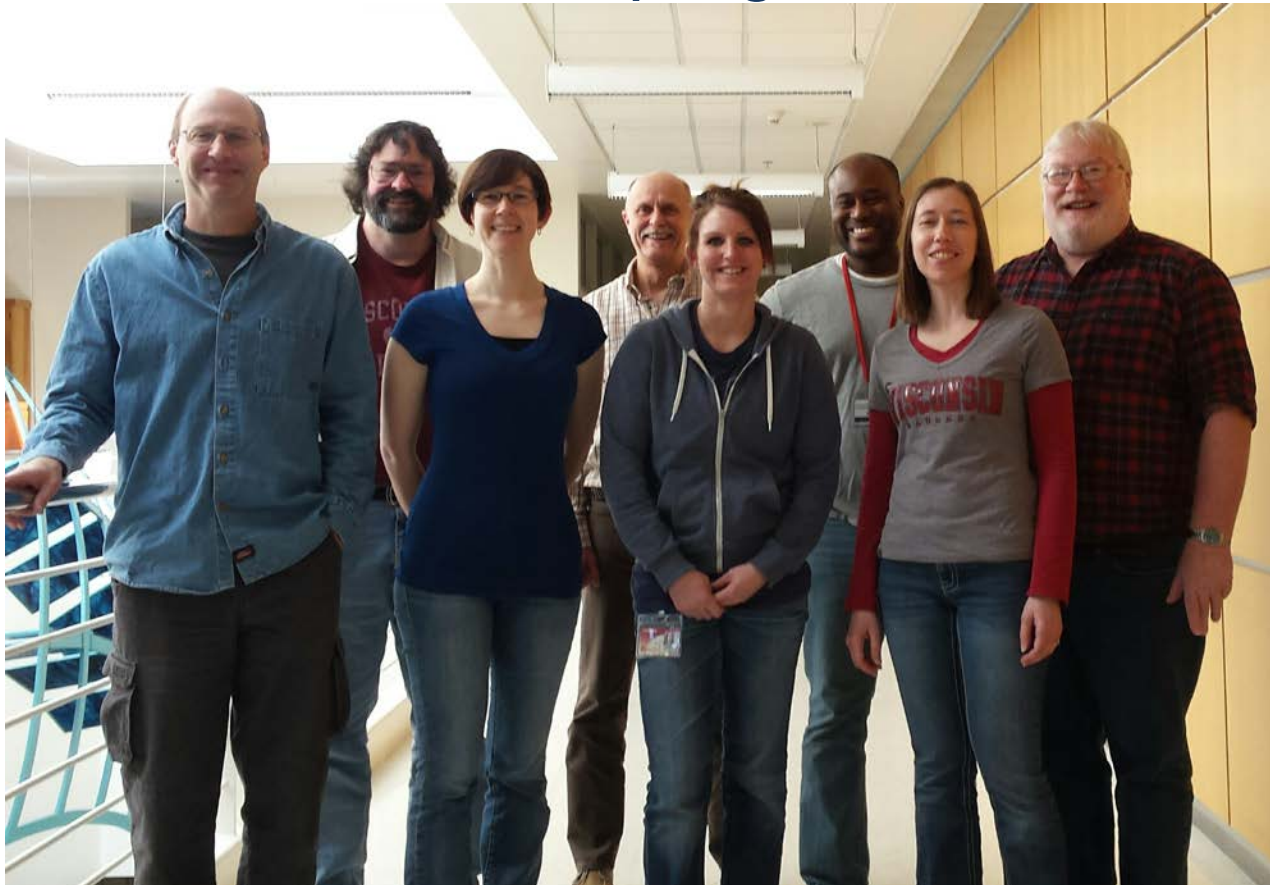
WSLH and the LRN-C

- WSLH is attached to the U. of Wisconsin
 - Confers outreach and collaboration advantages
 - Chemical Response is a distinct program
 - Formerly part of Env. Sci. Organic Chemistry
- LRN-C Staff
 - Some are formally in other programs & shared
 - Other staff are LRN affiliated and donate time & effort





- Virtually all LRN-supported staff share responsibilities in other programs
- FTEs estimated and programs listed





WSLH and the LRN-C cont'

- Instrumentation
 - Preparedness obligation 1^o priority, redundance
 - ICPMS-Wide dual use, limited to clinical matrices
 - GCMS-Mostly LRN, some Forensic Tox testing
 - LCMSMS-shared, one instrument for LRN use only
 - Older instruments donated to other programs





Non LRN-C Analytical Testing Support

- Bottom line is more/different/better/faster lab data
- Increased cross-training, faster TAT
- New +/- or improved tests
- Several aspects of testing assistance, can be staff only, instrumentation only, or both:
 - Method development/verification
 - Analysis
 - Data review
 - Granting instrument access to other programs
 - Technical consultation
 - Complete project administration



Non LRN-C Analytical Testing Support

- Multiple Testing Categories/configurations:
 - Routine, established tests
 - May be regulated or for research/Epi
 - New tests performed by LRN for other programs
 - Utilizing instruments & expertise
 - Limited term/single purpose research
 - Wide array of tests developed





WSLH Programs Benefitting:

- Organic Chemistry (Environmental Sciences)
 - E.g. SW-846, EPA TO15, air pollution tracers
- Clinical Metals (Childhood Lead Poisoning)
 - E.g. Blood lead, biomonitoring projects
- Forensic Toxicology
 - Anesthetic panel, VOCs, CN
- Biochemical Genetics
 - Organic acids
- WSLH PT program (Lab Improvement Division)
 - Sample preparation/verification
- Occupational Health
 - E.g nitrosamines in air





Routine, Ongoing Tests

Test/Panel	WSLH Program	LRN contributions	Comments	Test/Panel	WSLH Program	LRN contributions	Comments
Cyanotoxins in surface water	Env. Sci Organics	Instrumentation, service support, occasional analyst support	Panel includes microcystins, anatoxin-a, cylindrospermopsin	Atmospheric pollution tracers in particulates	Env. Sci Organics	Analyst support and instrumentation	Panel of 167 compounds, unique research method developed at WSLH
Nitrogen/Phosphorus pesticides in water	Env. Sci Organics	Instrumentation, service support	Panel of 11 insecticides	EPA TO15, Toxic organic compounds in air	Env. Sci Organics	Analyst support. Also used for hazmat incidents	59 volatile compounds
Carbamate pesticides in water	Env. Sci Organics	Instrumentation, service support	Panel of 10 insecticides	Organic Acids in urine	Biochemical Genetics	Analyst support	98 compounds, used to diagnose genetic diseases
Perfluorinated compounds in tissue, water, and solids	Env. Sci Organics	Instrumentation, service support	Panel of 17	Anesthetics in whole blood	Forensic Toxicology	Analyst support and instrumentation	Panel for arrested drivers, compounds interfere with legal ethanol analysis.
Personal care products in water & solids	Env. Sci Organics	Instrumentation, service support	Five index compounds, indicates presence of sewage	Tetra-hydro cannabinol (TCH) metabolites in whole blood	Forensic Toxicology	Instrumentation, service support, technical support	Blood panel for arrested vehicle operators. Provided for death investigations and suspected huffing cases.
Hormones in water	Env. Sci Organics	Instrumentation, service support	17-beta estradiol, estrone, estriol	VOCs or cyanide in whole blood.	Forensic Toxicology	Analyst support and instrumentation	Infrequent case requests
Hormones & metabolites in wastewater/solids	Env. Sci Organics	Instrumentation, service support	Panel of 22 compounds	Blood /plasma lithium	Forensic Toxicology	Analyst support and instrumentation	Employed for a wide variety of researchers & clinical diagnosis.
Mixed pesticides in water	Env. Sci Organics	Instrumentation, service support	Screening panel for 62 insecticides & herbicides	Blood metals panel, Se, Cd, Hg, Pb	Clinical Metals	Analysts, instrumentation, service support	Panel of 7 compounds; Industrial Hygiene Method
Benzotriazoles in water	Env. Sci Organics	Instrumentation, service support	Panel of three compounds	N-nitrosamines in air	WI Occupational Health Lab	Instrumentation, service support	Industrial Hygiene Method
Acid herbicides in water	Env. Sci Organics	Instrumentation, service support	Panel of 5 compounds	Benzothiazole and 4-tert-octylphenol in air	WI Occupational Health Lab	Instrumentation, service support	Industrial Hygiene Method
PAH's in water, air soil, tissue, filters	Env. Sci Organics	Analyst support and instrumentation	Panel Of 22 compounds, may be expanded.				



Limited-Term Testing

Test/Panel	Primary Investigator	LRN contributions	Project information	Test/Panel	Primary Investigator	LRN contributions	Project information
Doxycycline in human serum	Medical College of Wisconsin	Method development, Instrumentation, analyst support, service support	Pancreatic cancer study, new test method, ~100 samples	Sterols in human serum	Susan B Komen Foundation	Instrumentation, service support	Breast cancer study
De-icing agents	Airport Coop Research Program	Instrumentation, service support	Environmental fate of airline de-icing agents	Pthalates & related compounds in synthetic turf	University of Connecticut	Instrumentation, service support	
Firemaster flame retardants	Nat'l Park Service & WI DNR	Instrumentation, service support	Evolving towards a routine test	Aminoflavone in mouse serum/plasma	UW WIMR/McArdle Cancer Center	Instrumentation, service support	Tumor treatment research study
Blood metals	Penn State College of Medicine	Analyst support, Instrumentation, service support	Studies with 20 (pilot) of 100, and 300 samples. Oxidative stress/kidney cancer study	Phthalates and pesticides in sea turtle eggs	UW Zoology	Instrumentation, service support	Multiple year occurrence project
Blood metals	U. Wisconsin Population Health Studies	Analyst support, Instrumentation, service support	2200 samples, Beaver Dam Offspring Study, 10 year study of environmental factors on hearing & sight.	Bisphenol A in mouse serum and CSF fluid	UW ICTR/UW National Primate Research Center	Instrumentation, service support	ICTR Pilot Grant Supported
Blood metals	National Park Service	Analyst support, Instrumentation, service support	Multiple year study of raptor contaminant loads	Hormones in water, soil, biosolids	UW-EC&T and Discovery Farms	Instrumentation, service support	Multiple year occurrence project; US EPA STAR Grant
Blood metals	WI Dept. of Natural Resources	Analyst support, Instrumentation, service support	Multiple studies of different avian species, e.g. swallows, sparrows, geese	PPCPs in plant material	UW Soil Science	Instrumentation, service support	PPCP Plant Uptake Research Project; USDA HATCH/Israeli BARD Grant Supported
Blood mercury	WI Division of Public Health	Analyst support, Instrumentation, service support	150 samples SHOW study: State Health of Wisconsin	Pesticides in surface water	Medical College of WI	Instrumentation, service support	Occurrence study – surface waters from Peru; NIH Fogarty Grant Supported
Urine arsenic, cadmium, and uranium	WI Division of Public Health	Analyst support, Instrumentation, service support	SHOW study, 300 samples	Pesticide metabolites in sloth blood	UW Vet School	Instrumentation, service support	Multiple year occurrence project
Vitamin D metabolites, & precursors in human serum	WI Institute for Medical Research (WIMR)	Instrumentation, service support		Algal Toxins in Air	UW Whitewater	Instrumentation, service support	Multiple year occurrence project; faculty development grant supported
				Pesticides in surface wipes	CDC	Instrumentation, service support	Multiple Year Occurrence study – Green Housing Study Supported



To Summarize:

- Preparedness comes first, but...
- Value from LRN-C far exceeds PHEP
 - Look within your lab, be creative
 - Seek out collaborators
- Communicating added value is a challenge
 - Inventory of activities is useful
 - Many programs can benefit
- All consistent with our mission

THANK YOU!

Questions???



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