Mixtures Research with NIEHS Extramural Programs

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The NIEHS Extramural Research Portfolio on ‘Mixtures’

• Not a single, organized portfolio – it spans several facets of what we support
  – Remediation/Fate and Transport
  – Modeling
  – Mechanistic Research
  – Exposure Assessment
  – Epidemiology

• Generalizations:
  – Heavy focus on mixtures of closely related families:
    • Metals, EDCs, PCBs
  – Primarily 1:1 search for interactions
  – Some effort to look at nonchemical contributions
4) Are we ready to start thinking about Chemical and Non-chemical Stressors?
Genes, Environment, and Health Initiative

EXPOSURE BIOLOGY PROGRAM

- Develop technology and biomarkers
  - Diet
  - Physical Activity
  - Environmental Exposures
  - Psychosocial Stress and Addictive Substances

GENETICS PROGRAM

- Identify genetic variants
  - GWA Studies
  - Data Analysis
  - Replication
  - Sequencing
  - Database
  - Function
  - Translation

GxE
Next Steps: Solutions to One’s confounder is Another’s signal (or integration of Chemical and Non-chemical determinants of risk)

- Concept approved by National Environmental Health Sciences Advisory Council, May 2011
  - Technologies for improved measures of personal environment
    - move beyond external point of contact to internal dose
    - Integration of multiple components of the personal environment.
    - Validation of prototype tools
  - Proof-of-principle for comprehensive analysis of genetic variation and environmental exposure
    - Secondary analysis of GWAS data for ‘other than main’ effects
    - Addition of ‘G’ to ‘E’ cohorts
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    - Investigation of the mechanistic underpinnings of the interaction between genetic and environmental information.