

Report 72: Infrastructures for the Environmental Health Sciences

Convener: David Balshaw

Brief History:

Over the past decade numerous technologies have emerged, and continue to emerge, that hold the potential for fundamentally altering the way environmental health sciences research is conducted. Many of these technologies have either been slow to be adopted broadly or are inherently not suitable to wide-spread adoption. This session was focused on identifying strategies and topics for establishing centralized clearing houses for these technologies

Discussion Highlights:

The discussion focused heavily on technologies for exposure assessment and the varying needs of studies in terms of the analytical capacity of exposure assessment technologies in terms of the temporal resolution, number of analytes, complexity of the device and the cost of analysis.

A sentiment was voiced that tools that can be utilized by the lay public would be particularly powerful.

For more traditional analytical capacity such as biomarker detection the ability to certify laboratories as providing 'true' values was advocated. Two models were discussed, one was the use of a licensing protocol where certain labs would be certified, the other was the publication of standard procedures and certified quality metrics that could be more widely utilized.

Recommendations:

Establish a clearing house for exposure assessment capacity. This would span scales of analytes and technologies and be applicable to a range of studies from panel to mega populations of more than 50,000 subjects. It could also include an iTunes type infrastructure for mobile apps that could measure noise exposure or provide geospatial analysis of exposure and integration of diet and physical activity. This could also support validation of exposure metrics.

A second clearing house could include biomarker detection and validation including large scale mass spec expertise.

A third infrastructure would be an animal studies facility that would provide behavioral assessment, phenotyping and moderate to high throughput screening.

A fourth infrastructure would be a centralized database curating and adjudicating literature information on exposure and response that would allow imputation of exposure disease relationships.

A fifth infrastructure was discussed that is not limited in scope to NIEHS but is of critical importance; centralization of IRB assurance and informed consent for multi-center clinical studies.

Discussion Participants: Armstrong, Balshaw, Bird, Hricko, McConnell, R. Miller, Peden, Sandler