

1

2

Whatever scientific research approach is chosen it would be novel to prioritize: a) ways to include the subjects’ input in research design and b) yes, to REALLY prioritize communication of findings back to the research subjects. This will go a long way toward validating our ethics promoting good will.

3

Rather than list specific approaches here, I am pasting a section of a paper I've been working on. It speaks to the challenges facing universities as they attempt to grapple with scientific challenges at the dawn of our complicated 21st century. This offers a broad perspective and some suggestions on readings you may find useful. We are at the beginning of a new phase in the development of research and teaching – the dawn of networked science and pedagogy. The university’s role in society is dynamic. It is shifting now in the face of globalization and heightened competitiveness worldwide among nations and city-regions. In an excellent article on this subject—titled “Universities, Localities and Regional Development: The Emergence of the 'Mode 2' University?”—Harloe and Perry (2004) document how “There has long been a tension between the roles of the university in servicing the needs of sub-national economies and civil societies, those of the national state and those of learning and the pursuit of knowledge in an abstract sense” (p. 212). Harloe and Perry identify forces that may be leading to a new “mode of knowledge production” as universities are faced with increasing societal demands and expectations. The position in liberal democracies through much of the twentieth century can be accurately characterized by a significant degree of separation and segregation between the university, the state and the market. Recently, however, it has been posited that the balance is shifting away from relative autonomy towards a new 'mode of knowledge production' in which the growing engagement of universities with their regions and localities is an important aspect. (Harloe and Perry 2004, 212) The kind of university engagement Harloe and Perry refer to cuts a number of ways. On one hand, some university leaders and scholars advocate the corporatization of the academy following a conservative ethos focused on neoliberal commercialization. This stems in part from the increasing stress being placed on universities to enhance regional innovation and competitiveness “via harnessing the economic benefit of science and knowledge, in which the sub-national scale plays an important role” (Harloe and Perry 2004, 216). On the other hand, some university leaders and scholars aim to make the academy more accountable from social justice and equity standpoints involving critical pedagogy and civically-engaged research and service learning. Harloe and Perry argue that these trajectories constitute a mixed bag including opportunities and threats embodied in conflicts over the university’s mission, internal culture, governance and allocation of resources. How significant are these changes in the disposition of research universities? Some characterize the changes as part of a broader societal shift from a Mode 1 model of science and research to a Mode 2 model of science and research (Gibbons 1998; Gibbons 2000). Mode 1 science is organized by disciplines and conducted by scholarly communities of practice that use ontological frameworks defined by their discipline. This structure, Gibbons argues, “provides the guidelines about what the important problems are, how they should be tackled, who should tackle them, and what should be regarded as a contribution to the field” (Gibbons 1998). In contrast, Mode 2 science is characterized by knowledge production in the context of

applications, transdisciplinarity, heterogeneity and organizational diversity, enhanced social accountability, and a more broadly based system of quality control (Gibbons 1998). How does this shift from Mode 1 to Mode 2 factor into the dynamics shaping research universities and why is this worth considering? Harloe and Perry’s (2004) work is telling; they spell out four characteristics that define a Mode 2 University: First, it is closer to government and the market and is more directly responsive to national and regional needs in teaching, research and specific enterprise activities. Second, it conducts research in an interdisciplinary fashion and according to new criteria such as economic and social relevance. Third, it is innovative and interacts in a number of different networks and it is a key player in evolving systems of regional and local governance. Finally, changes in mission and practice are accompanied by internal turmoil, reorganization and restructuring. (p. 217)

4

Longitudinal studies - follow well chosen cohorts through multiple generations to provide information beyond the current community population. The partnership should as much as possible use real subjects (people in the community) in real (the community in which they live and work) environments. This will promote the research to practice, providing communities with practical information to reduce adverse health outcomes due to environmental exposures.

5

We recommend that the PEPH program support research into community and policy strategies for change, such as the conditions under which communities are able to mobilize effectively to address social and physical environmental conditions that contribute to adverse health outcomes, and the long term implications of policy changes for such exposures. Similarly, research that builds capacity for both research and intervention across a broad range of constituents (e.g., community members, community-based organizations, health service providers, academic/researchers) and for effective partnership efforts should be supported. Examples of such efforts include programs that support research (including intervention research) in which community-based organizations are able to apply and compete on an even footing with academic institutions for grants, and that some Request for Proposals be earmarked for community-based organizations rather than academic institutions. We also encourage the PEPH Program to support community-based participatory research (CBPR) approaches as a component of this broad-based program. The NIEHS has played a leadership role in supporting CBPR, and the PEPH Program provides an excellent opportunity for the Institute to continue to be at the forefront in the field. CBPR approaches, with their emphasis on engaging community and academic partners in all aspects of the research, are particularly relevant for partnerships for environmental public health aimed at examining and addressing health disparities. Training and capacity building for conducting CBPR might include efforts similar to those noted above, aimed at building capacity of diverse partners to work together, of community based organizations to take the lead on research, and of academically trained researchers to work in partnership with community based organizations (e.g., the PEPH Program might consider funding the development of post-doctoral training aimed at enhancing the knowledge and skills of researchers to be able to conduct CBPR).

6

One of the first research steps would be to develop a suitable training needs assessment tool and then conduct a training needs assessment of all of the Local Unions in Puerto Rico, in order to determine where to focus energy and resources. English language training materials already exist that could be translated into Spanish, and others could be developed based on the findings of the needs assessment. Environmental and public health topics would receive highest priority, and once developed into training materials, would be offered to all of the Local Unions in Puerto Rico, and delivered by a group of peer-trainers drawn from the worker community.

The training that is delivered could then be evaluated as to effectiveness or impact, by measuring changes in work practices, working conditions, reductions in use of toxic materials, use of control measures or personal protective equipment, or other indications of raised awareness of hazards, risks, and preventive measures.

7

Experimental and correlational research approaches should be part of this broad-based program. A variable, such as one mentioned in question 4, should be determined and both approaches should be applied to determine the outcome. The data/information generated from both approaches could provide useful information in dealing with potential public health hazards. The use of a model, such as NHANES, will permit a flexible but focused design of the study populations, while still allowing for modification of variables to very specific analytes. Once the experimental variables are applied and examined, the results and data provided will aid to develop correlational outcomes, which can drive the next experimental portion of the project. This cyclical development allows better isolation for selected populations and selected variables. With biota and biomonitoring, correlational outcomes may result, i.e., without knowing the background present prior to analysis, an elevation may not be easily determined, or a source may or may not be identified, but an absolute limit may be determined.

By using a biota monitoring approach, instead of a simple clinical or environmental focus, impacts on the human, animal, and environmental population provide a more complete picture. Trying to assess all significant contributions may seem overwhelming, however, identifying the potential contributors to the background and current levels within a potential at risk population makes input and outcome identification within reason.

Variables for exposures include: drinking water systems, ground water systems (including aquifers, estuaries, lakes, bays, etc.), human population (indigent, migrant, occupational, residential), animal population, crop and/or feedstock (human and animal), occupational and residential air, structure (occupational or residential).

Analyte types for exposures include: pesticides, volatile organic compounds, radiological and nuclear, pharmaceutical and/or industrial toxicology (particularly estrogens and drugs/materials of abuse).

Outcomes: background establishment (if possible), exposure impacts (long term vs. short term), development of a biota based statistical record (similar to NHANES or other database), reduction or elimination decisions driven by monitoring (continuous, interval driven, remediation, etc.).

8

Follow through on studies previously conducted including the 2002 nurses study. Seek partnerships when others have conducted related research.

9

Continued support of community-based participatory research in environmental health should be prioritized. Consider funding innovative research projects that require partnerships that include academic research centers, local government agencies (e.g., health departments), private sector, and community-based organizations.

10

Population-based epidemiological studies with biological measurements including genetics if applicable.

Trans-generational studies with vertical linkage between parental and offspring pairs such as parental trio study design which is very power, efficient and robust against many potential biases.

11

12

13

Not sure.

14

Database for nurse researchers

Dissemination of research/ translation of findings into practice recommendations - through vehicles which are accessible to general nursing community, not just EH specialists

15

It is important to link all stages of education, from K-12, to college, to professional (medical, nursing, legal, business) to continuing education of communities.

NIEHS has an important role to play in promoting 'prevention education' and linking health to our physical and natural environment - and hence to industrial ecology, transportation decisions, etc. It is important to integrate with other disciplines (geology, economics, ecology, anthropology) to accomplish this at all levels

16

17

Research approaches should incorporate well-established principles of community-based, participatory research (CBPR) and participatory action research (PAR).

18

First, there is a need for basic exposure research and population-based studies of health effects. Secondly, there is a need for translational and intervention research. For population-based studies of health effects, adequate and proper control for confounding needs to be addressed. Techniques such as propensity scores and marginal structural models are being used increasingly and show promise for controlling for the complex confounding structures inherent in environmental health research. Methodological work that addresses these techniques and makes them familiar and available to more environmental health researchers is needed.

19

See my answer to #1. Focus on preventing harm not proving death. Follow Devra Davis' suggestions in her book, The Secret History of the War on Cancer.

20

21

Population-based. So much of our research is based on projections of risk, modeling of risk, we need actual epidemiologic studies of risk when it comes to environmental exposures. However, having said that, focusing only on areas (geographic) of high concentrations of population isn't the only way to gather meaningful data. The exposures and health impacts of rural, sparsely populated areas must be included. This is particularly important if, as is projected, there is migration from coastal areas (currently high-density) to rural areas.

22

Building techniques to mitigate radon issues.

23

Nursing Research Centers of excellence should be developed across the nation. They should be empowered with sufficient resources and talent that would draw on current knowledge to develop and test assessment tools.

24

Validated survey instruments that can be used by trained and supervised lay outreach workers to survey community members on physical and social environmental factors that bear on health issues, ie. Parkinson's, autism, infant mortality.

Community Based Participatory Research models that appropriate for use by local public health agencies with assistance from EPA, CDC or academic partners.

25

Cross-cutting and interdisciplinary research. Funding only those groups that are truly doing or profess the ability to do this type of research.

26

Clearly, broader and less expensive monitoring capability will be important including the ability to rapidly determine sources of contaminants in site-specific environments. Research that would lead to a model of some type to predict public health impacts of multiple exposures would also be very important.

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27

I would stress an approach that links local resources with researchers so that there is extensive local involvement with study design, so that locals are kept up to date with progress and results, and so that the individuals in the communities are aware of the implications of the study.

28

29

Community-based participatory research

30

Alternative routing and storage patterns that can eliminate the risk of catastrophic releases, whether by accident or terrorism.

Provision of vulnerability zone info for the public and public officials, not primarily for emergency response officials who have universally and traditionally agreed not to share these with the public ("Don't alarm the public")

31

community participatory

binational joint efforts

federal-state and local partnership such as the EPA border 2012 efforts

incorporate environmental health into public health

32

See section (3)

33
CBPR

34
Differences in health outcomes associated with international variation in exposures is a seriously understudied area.

35
I continue to be astonished by the lack of understanding of the general public and even the K-12 community with their understanding of the practice of science. Our local newspaper is in the midst of a series on the cost of quack medicine on the health care system. It saddens me to say that even a simplistic understanding of science and medicine would have saved the system millions of dollars and prevented premature deaths of many foolish consumers of these products.

36
Talking with local public health offices, nurses based on local parishes or homeless shelters, and local community groups may yield anecdotal information about health outcomes related to community planning.

Getting an interested developer and community group to walk and document a neighborhood (using photos, recorded interviews, collage or other drawings) can be effective in getting people to link the connection between physical environments and health.

Beyond that, I am not a scientist and do not feel qualified to suggest appropriate research strategies. Communication tools to help disseminate the research will always be useful.

37
Community based participatory research is essential, as well as research that includes community participation. Timely research translation should be emphasized; however, research translation has to go well beyond journal articles and technology transfer (patent applications). These approaches reach limited audiences. Emphasis must be placed on identifying at-risk populations, informing, and preventing exposure to toxicants, particularly in vulnerable and disadvantaged populations, and informing public health policy.

38

39
Field staff who are willing and able to use "shoe leather" as data finding and discovery. Thorough on scene community assessments are valuable even if they have to be done initially as "windshield surveys" for observation of environmental issues. Items to be observed can include the number of stray dogs, pigeons roosting on homes, in a town the glass count and condition of sidewalks, in rural areas the trash/junk discarded and evidence of sewage. Note if any health

problem trends show up for residents who live near interstate highways (cardiac due to pollution etc).

40
defer to the researchers...

41
Community-based participatory research should be one of the approaches that needs support and development. Exposure assessment should move toward measurement of 24 hour exposures, combining different routes and pathways. Citizens should have more access to simple tools to measure their own exposures, as workers had in the nuclear industry, for example. There is a need to develop environmental public health science that allows average citizens to monitor their own exposures, so that they become more environmentally active.

NIEHS should encourage research that uses mixed methods and social science methods, especially when researchers and communities work together. The over-reliance in quantitative methods, narrow definition of environmental problems, and researcher-driven biomedical research has not contributed to partnerships. Instead, this approach reinforces the production of commercial, elitist, and reductionist knowledge that does not really reduce the health effects of toxic environmental exposures. This new program should focus on the needs of the public, instead of the needs of the biomedical researchers.

42

43
1) Many people do not understand what public health does and NIEHS could take the lead to create this understanding and awareness using environmental health issues.
2) community-based participatory research
3) science communication and risk communication

44
Large scale prospective epidemiologic studies that include biomarkers of exposure and surrogate endpoints.

45
The program should address circumstances where research and prevention activities by partnerships may offer advantages over conventional investigator-initiated research. Such situations may include:

- Unique or unusual exposures to a community
- Unique or unusual opportunities to access a target group for environmental hazards, including communities that are poor, minority or otherwise under resourced.

- Opportunities to develop and evaluate novel interventions to reduce exposures, or address potential health effects related to environmental exposures and to improve translation of research results.
- Situations where independently funded research is needed to address environmental health efforts and gain community acceptance of results.

46

There should be a heavy focus on community-driven research and community-based participatory research. Also see the West End Revitalization Association's new method, Community-Owned and Managed Research (COMR) in the Winter 2007 issue of Progress in Community Health Partnerships: Research, Education, and Action by Heaney et al. This approach addresses the history of abuse of resource distribution between university PIs and CBO co-PIs. The NIEHS should set a high standard for collaborative partnerships between universities and CBOs to produce research that can be used by CBOs to impact policies that will lessen the disproportionate environmental exposures in low-income communities of color across the US.

47

Using both existing house stock and new construction housing built to model standards, measure the presence of identified and currently recognized top six toxic compounds indoors to establish a baseline. ADD radon to the list because it is a Class A carcinogen and develops quantity in the built environment.

48

Summary reports that are understandable to professionals in fields other than medicine.

49

1. Larger focus on community, or population-based approaches
2. Sentinel event report and followup
3. Development of sensitive biomarkers of exposure and effect to evaluate environmental exposure-response.
4. Relation of external exposure to biomarkers of exposure in order to reduce exposures overall.

50

51

New ways to teach scientific understandings and skills related to environmental health science topics.; better dissemination of instructional models that work and incentives for teachers, schools and districts to use the models; applications of technology to promote community collaboration and education.

52

NIEHS has been a leader in advancing community based participatory research methods. CBPR methods should be required for PEPH projects. By CBPR, we mean projects that engage community in leadership roles from the beginning of study design, provide opportunities for community members to be involved in data collection and interpretation, and partner with communities to communicate results and implement changes to improve public health. CBPR has key strengths for PEPH:

Encourages research to address important, relevant questions.

Contributes to science literacy, environmental public health knowledge, and public trust in environmental public health research.

Advances scientific discovery.

The value of CBPR in building science literacy and the constituency for science is increasingly important, as science has clearly moved to the center of the political agenda, with debates over global warming, evolution, reproductive health, and so on. CBPR is an important strategy for building the public understanding and trust in environmental health science that is necessary to sustain public investments and support implementation of scientific knowledge. In our own research in the Cape Cod Breast Cancer and Environment Study, we have seen first-hand the development of science literacy in lay members of our Board of Directors and community volunteers as they have learned over the course of the study how science unfolds, often incrementally; what constitutes evidence; and how we need to develop new methods before we can get answers.

53

I think that community-based participatory research should be a part of this broad-based program. Under Dr. Olden's leadership, NIEHS was very focused on funding CBPR and community-university partnerships working on different environmental health topics. It's important that the new program does this as well.

I think that the program should fund work that utilizes innovative CBPR. The West End Revitalization Association developed the community owned and managed research (COMR) approach. This approach goes beyond CBPR and focuses on parity in management of the research program and process and equity in funding. Specific funding and technical support programs should be created that will fund community groups to use COMR to study and address environmental justice, built environment, and various environmental public health issues relating to chronic diseases such as obesity, diabetes, CVD, cancer, and asthma and environmental health disparities.

I think this program should fund projects that use more population health approaches such as multi-level modeling and ecologic modeling in the neighborhood health effects literature (Anna Diez Roux, David Vlahov, Sandro Galea). Fund projects that use statistical modeling techniques in the environmental health disparities literature (Rachel Morello-Frosch, Russ Lopez, Jason Corburn, Gil Gee/Devon Payne-Sturges, Soobader). Also create funding mechanisms that employ spatiotemporal mapping and estimation (kriging, Bayes), to examine the impact of pollution on health outcomes and spatial epidemiology methods and area estimates (Nancy Krieger).

54

EXISTING

- * CBPR should be included

NOVEL

- * Provide mechanisms for including youth in public health research in order to generate interest in the health sciences early and to increase awareness of early in life
- * Encourage community-initiated health surveys

55

Again (Not my area of expertise)

56

All the research programs / funding mechanisms and research approaches should be required to contribute to the public’s access to research findings. All research approaches are required to adhere to strict standards of financial management, animal care, human rights, etc; the responsibility to “report back to the larger community” should be on the same par. Does your research and evaluation of the NIEHS portfolio of grants listed in the RFI indicate that one or another research approach is better or worst than another? Using what criteria? If so, lead with those program formats. There are too many years of rich experience here to do otherwise. That said, the EJ requirement that a local health care provider be a partner, generally, was wasted money, time and good energy. Although the inclusion of a health care provider made logical sense, it most often didn’t work. Why? A frank discourse on this failure might be most instructive.

57

As long as they are rigorous and data based, it is appropriate to allow researchers to design methodologies and approaches that best fit their study goals and aims.

58

EJ, CBPIR, qualitative, quantitative, population, case study, etc. – all of it is valuable and relevant. Like the themes in the last question, the research approaches should not be limited by NIEHS, the best approach should be used based upon the needs and goals of the study. In basic science research NIEHS often identifies a method or theme in which to invest and develop (e.g. proteomics, epigenomics, etc.), and they have done that in the past with public health/outreach (e.g. K-12, EJ, CBPR), which has served the good purpose of developing those areas, but in terms of developing a 5-10 year vision, I’m not sure I would specify or limit anything. What would be useful, perhaps, is identifying or highlighting examples of best practices in each of these common research approaches.

59

See above but also include strategies for dealing with consumer demand , e.g. when mold activists demand action re mold in the environment, what are the best strategies for

responding, how can one use existing or minimally new data to answer questions, how does one most effectively communicate with advocates and activists?

60

Precautionary Principle, biomonitoring, translational research

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The Breast Cancer and Environment Research Centers’ concept of advocate-scientist collaboration is a step in the right direction. But to nurture these collaborations and effectively incorporate the best thinking on community-based participatory research, there needs to be more of a sustained financial investment by NIEHS. That financial investment compensates participants for their time and efforts so that the BCERC work stays a high priority. The investment also allows advocates to create models for community involvement that could be shared across the country.

65

Consumer advocate involvement like the work being done in the BCERC.

66

Advocates working with researchers and scientists.

67

As mentioned before, approaches should include the effects of climate change upon health and correlations between existing research foci.

68

Projects that engage communities at every level of decision making—from the initial project concept to the development of goals, objectives, work plans and evaluation processes should be a key research approach. Because the NIEHS EJ program is unique in its commitment to genuine community based participatory research efforts, it is important that a dedication to continuing this community-based approach, regardless of the specific aims or focus of a given project, be paramount.

69

Care will be need to ensure that "research" does not move state environmental public health program away from their HIPPA exemptions. Several levels of research that we would be interested in can be exemplified by:

A: What are the regional or local CR functions for "truer" assessment of effects to exposure (as described above)

B: Better understand on regional and local features that modify or influence those effects (smoking, health status...)

C: How to incorporate accountability into those effects, how demonstrate and communicate effect costs

D: Integration of multiple health outcomes and multiple exposures to understand at a more global level the true effects of exposure.

E: Communicating those global level linkages

70

71

Traditional research – reviewing and consolidating previous studies.
Collaboration with organizations already involved in research topic.

72

73

Use practitioner and academician based expert panels and focus groups to identify community and research needs in the areas of environmental health and public health.

We believe, with respect to children’s environmental health issues, that there should be comparative studies between children exposed to environmental contaminants and their parents (living in the same household). Such studies may provide useful information concerning differences in toxicodynamics and toxicokinetics.

Research on Pharmaceuticals and Personal Care Products (PPCP’s) in the water system should, in addition to the parent compound, also evaluate its metabolites and degradation products. Studies also need to look at the effects that different drugs have when they are combined with others to assess interactions (i.e., additive, synergistic, potentiation, and antagonistic effects). As stated in response to question 1, any research that NIEHS could perform that would shed some light on exactly what we are getting back from environmental health investments and efforts would be helpful to our cause. This would give environmental health professionals something that they can then take to their policy makers in terms of showing cost-benefit.

74

The use and development of GIS methods for mapping health disparities, environmental stressors and health resources. Specifically, the use of spatial statistics to map patterns of disease and the association with the spatial distribution of stressors and resources/services. In general, there is a priority to take a system-based approach to health that identifies drivers of disease, and integrates prevention and treatment policies and practices. We also need to go

beyond the single endpoint, single risk agent approach, and characterize the interactions among endpoints and agents.

75

Research approaches should include longitudinal studies as well as epidemiologic studies that can identify health outcomes associated with OP exposures. Children should be followed at regular intervals, which may be possible through the National Children’s Study. Farmworkers should be followed long-term to assess the effects of chronic, low-level exposure.

76

77

1. Evaluation of governance systems (e.g., inter-agency policy and procedure systems)
2. Interventions targeting governance responsiveness to public need, especially communities with traditional vulnerabilities evidenced in health and social disparities
3. Mixed-methods (quantitative, qualitative)
4. GIS methods that link system activity to population response (density mapping)

78

Possibly study the long-term health effects of residents who live in Brownfields properties and maybe even try to quantify the improvement in health once properties have been remediated and environmental hazards are no longer present. This might help quantify the impact that NIEHS has had on these communities. I’m not sure if this kind of research is possible, but it is just a thought.

79

Our EHS center scientists in each of specialized field of EHS should offer their services and act as the reference and the resource person.

80

Population based- Intervention based

81

Again, lots of door-to-door would be good as well as open forums for the health officials and policies makers so they can work directly with researchers and the community.

82

I would like to continue to see CBPR and community partnership planning grants funded. Small amounts of funding could go to community outreach/education, but care should be taken that the calls do not duplicate environmental awards available from the EPA.

83

Again, studies on the impacts and results from specific laws and policies designed to lessen the health impacts from environmental contaminants.

84

Do not neglect to include a call for new, innovative statistical methods -- not just for combining simple analyses of all the different pieces of information, but for really looking for exposures (genetic & environmental) and outcomes JOINTLY -- new approaches for using flexible models in machine learning (kernel methods, multi-task learning, nonparametric Bayes methods -- all very powerful and currently used in interesting real-time applications such as training smart robots or blowing up submarines, not whales) could really improve analysis of large scale (e.g. whole genome) studies. NICHD currently has a working group preparing a special edition of Epidemiology to call attention to the need for more work in this area, as the state of most analyses in the literature is pretty abysmal given the lack of well-recognized good methods.

85

Finding the right combination of safe building materials can be achieved by utilizing the holistic approach of Bau-Biologie™. Understanding this holistic approach to building design and construction is paramount to establishing a range of synergistically compatible materials. It is also important to note that most LEED certified housing is economically out of reach for the general population of those living with MCS. Alternative natural building materials, in conjunction with the correct composition of these materials, and the institution of tree wise wiring with special circuit shutoffs, are principal in creating healthy dwellings for people who live with MCS, SBS, BRI, EI and EHS. These alternative solutions must be applicable to the construction of a prototype to address housing where the health risk is greatest.

86

Collaborative community research needs to be expanded-with community partners, beginning in middle school-kids are great inoculators of information-sideways to peers and up to parents and teachers. I think they are the greatest untapped natural resource we have-time is an issue, but if we look at 'after school' programs that encourage their involvement, we might have chance in preventing and instituting interventions that they own.

87

Increase K-12 outreach, because children are more open to new ideas, believing that their behavior/environment can alter their health. Kids tend to believe what they are taught, unlike grown-ups. Unfortunately, we live in a country that teaches ignorance (I live in Burlington, KY, home to the Creation Museum. Google it, if you don't believe me).

88

89

As noted above, because of our success with a community-academic research approach, we believe that community-based participatory research (CBPR) is one such research approach that can be successfully used in examining disease processes and addressing public health concerns of relevance to environmental health sciences. We acknowledge NIEHS’s recognition and leadership in the area of CBPR among NIH agencies and hope that the PEPH program will continue to provide support for this approach in environmental health research.

90

- The Community-based Participatory Research (CBPR) model needs to be widely adopted.
- As mentioned above the focus should be intervention studies.

91

Molecular approaches should be a part of this program.

92

A molecular epidemiological approach to understanding and addressing environmental health concerns should be an integral part of this broad-based program. In this way, the impact of exposures to environmental pollutants can be studied at a cellular level, and the impact of these molecular changes on communities at large can also be evaluated. It also gives epidemiologists the opportunity to conversely explore observed health trends within communities in a biological context.

93

There is a need for not just biological research of the effects of exposures on specific diseases, but also the effects of intervention and training on vulnerable communities.

94

CBPR should continue, but only with grants funded for at least 5 years and in situations where the academic group has already formed a close working relationship with a community partner. CPBR studies takes significant time to nurture and therefore research is slower than expected.

95

1. Measure mercury vapor levels in hallways of heavily Caribbean-Latino apartment buildings (as was done by Stern et al. 2003)
2. Follow up by measuring mercury vapor levels in apartments found to be emitting mercury vapor into hallways.

3. Measure mercury levels in wastewater, and mercury vapor levels above wastewater in Caribbean-Latino neighborhoods.
4. Measure mercury levels in hair of Caribbean-Latino persons who may have been exposed to ritualistic mercury vapor at first- or second-hand. The hair samples should not be washed as a part of the analytical protocol, as we wish to measure both adsorbed mercury on the hair, as well as absorbed mercury in the hair. Should an elevated mercury level be found, a washed aliquot of the hair can then be analyzed. Any elevated levels should be followed up by measuring mercury vapor levels in the subject's residence, in order to correlate these two measures of mercury vapor exposure.
5. Measure mercury vapor in exhaled breath. This would be an excellent mass-screening tool. (Pogarev et al. "Direct measurement of the mercury content of exhaled air: a new approach for determination of the mercury dose received." *Analytical & Bioanalytical Chemistry* 374:1039-1044 2002 <http://www.springerlink.com/content/aj7lx9v09pb7nl5b/>)
6. Measure mercury in breast milk of Caribbean and Latino women. A pilot study found high levels of mercury in breast milk in a Dominican woman who applied mercury-laced cologne to her skin over a period of two years as a love potion, while her urine, cord blood, and amniotic fluid mercury levels were in the normal range. It is speculated that the lipophilic mercury was differentially absorbed in the milk fat. (USEPA Task Force on Ritualistic Uses of Mercury Report December 2002 p.3 <http://www.epa.gov/superfund/community/pdfs/mercury.pdf> .
7. Validate the use of the Milestone DMA-80 mercury analyzer (www.milestonesci.com or its equivalent) for clinical applications. This would be an ideal instrument for rapid and inexpensive screening of mercury levels in hair, urine, blood, breast milk, and teeth.
8. Measure mercury levels in deciduous teeth ("Mercury in primary teeth in preindustrial Norway" Eide et al. *European Journal of Oral Sciences* 101:1 February 1993 <http://www.blackwell-synergy.com:80/doi/abs/10.1111/j.1600-0722.1993.tb01636.x>). Basically, it is suggested that the identical methodology as used by Needleman et al ("Deficits in psychologic and classroom performance of children with elevated dentine lead levels" *New England Journal of Medicine* 300:13 March 29, 1979 http://www.osti.gov:80/energycitations/product.biblio.jsp?osti_id=6288577) be employed, merely substituting mercury for lead.
9. Validate the efficacy of mercury vapor filters, such as those made by Ohio Lumex Co. There will be a major demand for such apparatus should the predicted mercury contamination of large number of dwellings be demonstrated. http://www.ohiolumex.com/product/vapor_filter.shtml . Availability of such filters will enable continued occupancy of dwellings found to be mercury-contaminated, pending their eventual decontamination.

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We recommend that community-based participatory research (CBPR) approaches be a part of this broad-based program. The NIEHS has played a leadership role in supporting CBPR, and the PEPH Program provides an excellent opportunity for the Institute to continue to be at the forefront in the field. Such community-driven CBPR approaches, with their emphasis on engaging community and academic partners in all aspects of the research, and their focus on conducting both etiological research and intervention and policy research that is mutually beneficial to the partners involved, are particularly relevant for partnerships for environmental public health aimed at examining and addressing health disparities. Related to this and the training and capacity building issue raised above, the PEPH Program might consider funding the

development of a post-doctoral training program(s) aimed at enhancing the knowledge and skills of researchers to be able to conduct CBPR.

We encourage the PEPH Program to support research in which community-based organizations are able to apply and compete on an even footing with academic institutions for grants, and that some Request for Proposals be earmarked for community-based organizations rather than academic institutions.

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Because of the significant role science plays in advancing public health, it is important that this broad-based program validates and increases support for forms of community-based research such as CBPR. CBPR creates unique opportunities to make distinct contributions. For example, the most vital issues and effective strategies are more likely identified when the community plays a significant role in that process. CBPR facilitates considerable community involvement by supporting those to come forward and share about issues based on their lived experiences. Additionally, CBPR allows for members of community to be part of creating the solutions and implementing strategies that allows for more effective change on environmental exposures, policies and daily life.

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Research trajectories should adopt multi-disciplinary approaches and be implemented in a broader frame work. Examples of such research could be found in the better understanding of how social and economic factors may interact with environmental and occupational risks in terms of affecting population health. The project partners expressed great interest in developing methods for the improved assessment of multiple environmental agents-in short being better able to evaluate cumulative risk.

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Innovative models and frameworks that build from systems based approaches could allow for extensive incorporation of gene environmental research for translation and for incorporation of research from model systems through to molecular epidemiology.

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Interdisciplinary research and community based participatory research approaches should be emphasized.

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Epidemiological and mechanistic studies of gene-environment interactions should take advantage of existing and new tools to study environmental health problems using human populations and animal and in vitro models. For epidemiological studies, they must take into account complex social, economic, behavioral, and environmental conditions (physical, biological, chemical, and built environment) at multiple levels (e.g., home, workplace,

neighborhoods, and community/population influences). Assessment and analytical tools will need to be developed for both epidemiological and mechanistic studies.

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Expansion of review panels to include both diversity in affiliation, i.e. scientists, community members, and also providers, and policy-makers; and also diversity in the field of scientific review – i.e. methodologists, ethicists, physical/biological scientists with interests in multidisciplinary community research.

106

There are several research areas that should be part of the broad-based program to address environmental exposures. One would include identifying baseline measures of toxic emissions throughout the US, linking them to GIS maps of the country. Community and worker right to know laws should be more stringent so that communities know and understand the risks associated with their environment, and the environmental contaminants to which they are potentially being exposed. Since 9/11, the US has reduced the efficacy of community right to know because of the issue of homeland security.

In New Jersey there is legislation on our Governor’s desk to ban the use of all animals for testing the effects of chemical exposure and medical drugs. While this method may not appeal to many people, the need to have a suitable means to provide effective data on exposure and its effects is critical in our field. The groups who are supporting this ban have given no reasonable alternative for providing the very critical information that is generally attained from this necessary work. As we all know this is where we receive much of the data for LD50, LC50, IDLH, and TWA’s. This is extremely important to public health and is something that may be of interest to PEPH program regarding specific research needs.

107

WERA’s community-owned and managed research (COMR) data collection, dissemination of data, and reporting; parity in community-based research facilitation/management and equity in grant funding; and compliance and enforcement of violation of US EPA public health statutes when local, state, federal government agencies and universities have liabilities.

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- o In developing and disseminating information, partner with organizations that operate at the local level, such as CityMatCH and NACCHO.
- o In conducting research, collaborate with maternal and child health professionals in universities and at the state level.

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a.) Community-Based Participatory Research: Interested researcher(s) can aid the impacted community in understanding the process (objectives and methods) of a health study or risk assessment and will help the affected community to understand how the public health significance (and limitations) of the study results can be evaluated. Secondly, CBPR can give the community the experience of involvement and achievement.

b.) Advisory boards remain critically important to ensuring broad-based input and can serve as a mechanism to educate the impacted community about the research objectives and methods being used.

c.) Medical monitoring programs are underutilized as a research method. In addition, it can help to:

- promote prevention practices and provide targeted screenings;
- build awareness and educate the impacted community about how their lifestyle affects their health;
- develop a large database that informs current health practices and sows the seed of future research studies; and
- eases a stress factor for an impacted community.

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Applied research with community and other key stakeholders involvement, including relevant NIEHS grantee(s), is the only meaningful approach.

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Epidemiological studies and community based integrated analysis.

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• Utilizing programs that bring the research findings to the public where they gather, but is more than a health fair. Something that is well structured and presented on a consistent basis. A forum that can collect data while addressing concerns of the population and also provide services and interventions.

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SEE ABOVE – emphasis on truly multi/inter disciplinary research and training

120

There are specific and set scientific protocols designed and proven by the EPA that we will follow. In addition we have an innovative ability to add to this dimension, These approaches will be designed to be duplicated and made available to forward any related research and programs. As stated before, TRES is a business and a cooperative, with the understanding that it takes a community of micro to macro interests to create any positive and sustainable results.

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Specific research approaches that should be part of the broad based program would include supporting data collection and analysis at the community level, with immediate access to lab facilities that can produce quick results. SVPEJ is currently working on a Communication Model which utilizes CBPR principles through conducting 8 community focus groups culminating in a town hall meeting with policy makers regarding the public health impacts from land use policies and development of a policy matrix for addressing the outcomes. Also a direct involvement of the local health care providers by proving particular incentives would be helpful.

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A very basic approach would be to conduct a pilot educational program with a small geographic area following baseline, intervention, and follow-up data for changes in behavior at the child care program level.

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Frequently the Division's work identifies small numbers of people who have likely been exposed to environmental contaminants at levels above regulatory standards; however, the number of individuals is too small to allow for conventional epidemiological analysis. It would be helpful to be able to provide concerned residents with a better understanding of their personal exposure and the health implications of that exposure – possibly by strengthening the scientific understanding of the relation of biomonitoring and current or future health effects.
