

2011 Environmental Health Summit: Incorporating Public Health into Sustainable Solutions for Product Development and the Built Environment Using a Systems Approach

Recommendations from the Research Triangle Environmental Health Collaborative

Abstract

The Research Triangle Environmental Health Collaborative (The Collaborative) convened an Environmental Health Summit for two days in November 2011. A diverse group of almost 100 environmental and health experts as well as others from industry, academia, the private sector, local and state government and non-governmental organizations discussed how best to incorporate public and environmental health considerations into sustainable solutions for product development and the built environment using a systems approach. Recognizing that a sustainable future will require collaboration across all levels of government and sectors of society, the event included participants from organizations and interest groups not primarily associated with environmental and public health but who nevertheless are integral to forging a sustainable and healthful future.

The summit's **desired outcomes** were to:

- Identify gaps in current methodologies that aim to measure the positive and negative effects on public health resulting from the design and adoption of sustainable solutions, including unintended negative consequences of these solutions;
- Provide recommendations for how to address these identified gaps; and
- Recommend ways to standardize and incorporate public health metrics into sustainability driven policy and decision-making.

The summit discussions centered around three workgroups focused on 1) sustainable systems, 2) the built environment, and 3) sustainable products. The focus of this paper is a detailed accounting of the priority gaps in each of these three topical areas and associated recommendations. In addition, the following four cross-cutting recommendations emerged in common from the collective work of the three summit workgroups.

- **Leverage public/private partnerships;**
- **Take a long-term and systematic approach** – focusing on data-driven with causal insight;
- **Promote collaboration**, especially across silos of expertise and responsibility; and
- **Ensure initiatives include reporting and accountability components.**

Summit participants emphasized that enacting these recommendations is not trivial and requires a deliberate and dedicated approach.

Overview

Sustainability has become a popular buzzword in the age of globalization. While the environmental dimensions of the concept are widely recognized, the public health and human wellness dimensions receive less attention.

Sustainability has been variously defined, most notably by the United Nations' 1987 Report of the World Commission on Environment and Development which stated that sustainable development is "meeting the basic needs of all and extending to all the opportunity to fulfill their aspirations for a better life... without compromising the ability of future generations to meet their own needs" [1]. Participants in the 2011 Environmental Health Summit tailored that definition to further specify sustainability as "a community's ongoing capacity and resolve to work together to establish, advance, and maintain effective strategies that continuously improve health and quality of life." The former definition relates aspects of social and intergenerational justice, environmental carrying capacity, and the need for human development. The latter constitutes a shift toward the Summit's objective of placing greater emphasis on the public health and human wellness components of the concept.

Analysis of the academic literature bears out the trend in rampant interest and environmental emphasis. Citation analysis has shown that the academic literature related to sustainability is currently growing exponentially with a doubling period of approximately eight years [2]. Another study that conducted language analysis found that while terminology related to wellbeing, livelihood, education and medicine is quite common within that literature, health ranks thirteenth in cluster size and age of focus [3]. To address this discrepancy, Summit participants organized their thinking around two major points of contact between the environment and public health: products and the built environment.

There are many factors driving the increasing importance of sustainable solutions to pressing problems at global, regional and local levels. Of particular importance to the emergence of sustainability are global scale impacts on environmental resources including ozone depletion, and the build-up of toxics in the environment to name just two examples [4]. Of particular relevance to the health summit discussion are the global drivers of urbanization, consumption, and the attendant exponential growth in population.

More than half of the world population now lives in urban centers, a trend that is projected to increase through the middle of the century [5]. This milestone holds implications for the future importance of the built environment both in providing essential services and the impact on human health and the environment. It is also significant in that it marks a point of transition away from traditional human relationships with the environment. The human shift to urbanization is coupled with parallel growth in the world's middle class. Particularly in Asian Pacific countries, the expansion and spending of the middle class are projected to more than double by 2020 [6]. The provision of essential services is also changing as this urban and wealthy population continues to grow. Estimates published by the United Nations indicate the world population reached seven billion people on October 31, 2011 [7]. The milestone comes just 12 years after the previous milestone of 6 billion people in 1999 [8], and current estimates indicate that although the rate of growth is subsiding, the world population will continue to grow to approximately 9 billion people by mid-century [9]. The widespread impact on public health from both the built environment and products is readily apparent.

There is growing awareness of these growth trends within the public, private, and government sectors. The private sector, in particular, has been more aggressive in the pursuit of understanding and adopting of sustainability principles. For instance, manufacturers, brands, and retailers, especially those with a global presence, are keenly aware of potential emerging markets and the growing pressure on existing supply chains and resource availability.



Sustainability: A community's ongoing capacity and resolve to work together to establish, advance, and maintain effective strategies that continuously improve health and quality of life.

The private sector is also leading the charge toward the Summit's third aim of employing systems thinking in the development and adoption of sustainable solutions, particularly in the product sector. The maturing field of life cycle assessment (LCA) has been one such model that helps firms evaluate the impact of their products from raw material extraction through disposal – i.e. “cradle to grave.” Although LCA tools have become more sophisticated in modeling the complexity of the product life cycle, they remain expensive, time consuming, and limited by data quality and availability. To address these concerns and the growing awareness that more systematic change is necessary within entire industries, trade groups and industry coalitions have formed in recent years to develop sustainability-based standards, share best practices, and create direct-to-consumer and business-to-business communication tools. Examples of these trade groups include the Forest Stewardship Council, the Sustainability Consortium, and the Sustainable Apparel Coalition [10, 11, 12].

Government institutions, like the United States Environmental Protection Agency (EPA) are evolving similarly in their understanding and approach to their regulatory charge by moving from a risk- to systems-based approach. Created in December of 1970, the EPA's mission is to “protect human health and the environment” [13]. The EPA's regulatory power comes from major landmark legislation, including the Clean Air Act, the Clean Water Act, the National Environmental Policy Act (NEPA), and the Nation's solid and hazardous waste laws. The EPA is working to evolve this media-based (air, water, soil) risk assessment approach to environmental regulation by adopting a systems-based approach that is more holistic and adaptive. In the past decade, the EPA has also undertaken careful consideration of its role in the sustainability landscape and in 2006, the EPA issued guidance on how to conduct a LCA [14]. In 2010, the EPA commissioned a study by the National Academy of Sciences to advise the agency on how to incorporate sustainability into all of the EPA's programs [15].

In addition to the concern of intergenerational equity most closely associated with The Bruntland Commission report, the idea of intragenerational equity was also identified therein as a critical necessity and led to a nuanced definition of “sustainable development” [1]. While the world stage seeks to address development as a mechanism for addressing the stratification between developed and developing countries, social justice and equity are also a concern within communities, as well as within supply chains for goods and services. Particular to the discussions at the Summit, this includes consideration of worker health in the design and development of better products and service delivery, because workers often face the highest risks during product manufacture, use, and disposal, and because occupational safety and health has been under-emphasized in discussions of sustainability to date. Intragenerational equity would also include consideration of equitable distribution of both risk and development among the various social dimensions of domestic populations (race, socio-economic means, age, etc.).

North Carolina is not exempt from facing the challenges described above. The population in the state has been growing between one and three percent per year for at least the last four years [16]. This population growth has led to the spread of suburban-style development across the state that has supported a healthy real estate market and growth in service industries for home building and wholesale distribution [17]. At the same time, the state retains an agricultural base and is one of the largest producers of livestock in the country. While this growth has been good for the economy, the health implications are also evident as approximately one third of the population has been found to be obese and hypertensive [18].

But North Carolina is also positioned to address these challenges despite a contentious political climate. Evidence of the ties between transportation options and health outcomes was noted by speakers from state government and research institutions in the state who spoke to the Built Environment Workgroup. In addition, the state and local communities fund and support various programs related to health and environmental improvement. These programs range from a robust system of community farmers markets [19] and sustainable agricultural programs, to an engaged industry base interested in the favorable business climate and the ability to retain high caliber employees as evidenced by representation within participants at the Summit.

Emerging from the evolving global, national, and local landscapes it has become clear that simple solutions will not suffice to address the challenges that threaten a sustainable future with high public and environmental health. Sustainable solutions will require systemic understanding of tradeoffs, risks, and unintended consequences.

The 2011 Environmental Health Summit tackled three aspects of this challenge: a systems approach, the built environment, and sustainable products. Summit participants within each group represented a range of opinions and stakeholders, ensuring a rich and lively discussion. The recommendations arising from the Summit are presented below.

2011 Environmental Health Summit: November 7-8, 2011

Incorporating Public and Environmental Health into Sustainable Solutions

The theme of the 2011 Environmental Health Summit was “Incorporating Public and Environmental Health into Sustainable Solutions.” Almost 100 invited participants and experts representing academia, government, private-sector organizations, and public interest and advocacy groups contributed to the two-day summit.

Participants were assigned to one of three interdisciplinary workgroups, each with a specific focus:

Workgroup 1: A systems analysis approach to integrating public health (including occupational and environmental health) into sustainability efforts

Workgroup 2: Integrating public health into efforts to cultivate the sustainability of the built environment

Workgroup 3: Integrating public health into the manufacture of sustainable products

During group breakout sessions, participants in each group brainstormed and prioritized recommendations for addressing gaps in current methodologies and approaches to development and adoption of sustainable solutions to pressing problems and the impact on public health.

While each group focused on one of the three topics above, considerable overlap and synergy emerged between the groups. To capture this synergy, all of the groups convened several times to solicit feedback on ideas from their peers. The resulting recommendations represent the participants’ consensus views.

Common Themes

A number of common themes emerged from the discussions and recommendations of the summit’s workgroups. Specifically, the summit participants identified the following recommendations as essential to successfully integrating public health into sustainable solutions:

- **Leverage public/private partnerships;**
- **Take a long-term and systematic approach** – focusing on data-driven with causal insight;
- **Promote collaboration**, especially across silos of expertise and responsibility; and
- **Ensure initiatives include reporting and accountability components.**

Leverage the public/private partnerships

Each group recognized and reinforced the idea that different sectors of society bring different strengths, expertise, and responsibility related to effective implementation of sustainable solutions and that these should be leveraged for maximum benefit. For instance, non-profit groups like the Forest Stewardship Council that aim to bring together industry, government and consumers could serve as models for the formalization of stakeholder partnerships around particular issues or industries.

Take a long-term and systematic approach

Each group also recognized the bias of modern society toward short-term crisis management and the need for increased focus on long-term thinking related to resource management and prioritizing environmental and public health. To effectively implement long-term thinking, better understanding of the systematic connections and leverage points between the social, environmental, and economic sectors or components of sustainability is necessary (see Figure 1).

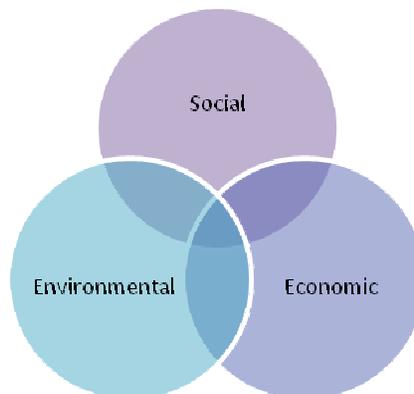


Figure 1. The Sustainability System

Promote collaboration

As society has grown more and more complex, silos of expertise and responsibility have formed naturally. Summit participants recognized these silos within their own areas of professional engagement and agreed that collaborative action is necessary in order to make real progress in implementing sustainable solutions that improve public and environmental health. Communication between government agencies, collaboration between different levels of government, and open, transparent engagement with a range of stakeholders are just a few of the dimensions calling for collaboration in this arena. In addition, private sector companies rich in data must be incentivized to collaborate with public and academic institutions so the needs of society can best be served. It was recognized by the participants of the summit that industry is ahead of government in pursuing sustainability and there is a critical need to a private-government collaboration to achieve a sustainable future.

Reporting and accountability

Finally, each group identified the need for reporting and accountability as essential to successful implementation of sustainable solutions. To move sustainability from ambition to reality, it was recognized that progress must be both measurable and reported to ensure accountability and effectiveness. As evidenced by the success of Underwriters Laboratory to address the need for improved safety in consumer products, summit participants agreed transparency in reporting was needed in addition to effective, measurable metrics and clear communication.

Recommendations

What follows is a summary of the recommendations that emerged from each of the workgroups. Each group identified gaps in their sub-topical area of incorporating public with sustainable systems, built environment and sustainable products. Each group then brainstormed recommendations to address those gaps, before finally ranking the recommendations by level of importance. Feedback from plenary session discussions was incorporated at each stage of the process. The final recommendations, which follow, were approved by the participants of the conference in the final plenary session and represent a consensus of summit participants.

Workgroup 1. A systems analysis approach to integrating public and environmental health into sustainability efforts

The Systems Workgroup tackled an important question: **How do we use systems analysis techniques to incorporate public health into sustainability objectives?** Systems are, by definition made up of multiple components that interact over time. Various constituents can view those components from their unique perspective. For example a consumer might care how much energy a particular television uses, while a policy maker might care how the policy they write affects the design, sale and use of that television. Also, systems exist at different scales,

from local, to national, while the state of the system can be measured using information that it creates. Understanding the interactions of the system components, and how they relate to the outcomes that are desired is the core of systems analysis. These principles and techniques have been implemented in various forms to address a diverse set of issues including productivity, efficiency, profitability and environmental impact.

The Systems Workgroup identified several gaps in the degree to which systems thinking is currently applied to the challenge of integrating public health considerations into sustainability efforts, as follows:

Gap 1. Limitations of Existing Tools Like LCA.

Gap 2. Link Between Data, Systems Models, and Policy Outcomes and The Ability of The Public To Participate in The Analysis Process and Influence How Information Is Used.

Gap 3. Technical Questions Needing Attention (e.g., scale, weighting, metric, and parameter selection).

High Priority Recommendations:

- 1.1. **Make the Case** – Public health is embedded within each of the three pillars of sustainability: environment, economy, society. Recognizing that within the context of product development, where several sourcing and marketing initiatives are underway, it is recommended that systems thinking be expanded and incorporated into initiatives like the Partnership for Sustainable Communities (PSC) between EPA, HUD, and DOT [16]. It is further recommended that Health and Human Services (HHS) be included in the partnership. This will also allow the systems methodology to percolate through the many levels of government involved, including state and local communities.
- 1.2. **Create a Framework** – Identify the human health outcomes of importance and determine how best to measure them. Then establish and test the logical relationships between system structure and the health and environment outcomes. The human health metrics and outcomes should be consistent across systems, i.e. built environment or product systems. Finally, to engage the private sector, the framework should also be enforceable, for example, by NEPA.
- 1.3. **Engage the Public** – Effective public engagement should be considered a high priority for the implementation of the systems approach. Engagement is required not only to gauge the true public interests, but also to ensure the public is involved in designing the best possible solutions. Public engagement efforts should be appropriate to the scale of the government and decision point.
- 1.4. **Promote Collaboration** – Cross-silo, cross-sector, cross-agency coordination and communication should be established via information sharing systems across both horizontal and vertical societal structures. The responsibility for this priority is likely to be diffuse, but broadly applicable which does not minimize its importance. Solutions that are jointly developed will be more broadly supported and readily implemented.
- 1.5. **Establish Reporting and Accountability Mechanisms** – In addition to having reporting and accountability structured to provide transparency via the use of metrics, It is also important that development of a set of indicators be structured such that weighting can be used to reflect the public's values and priorities.

Medium Priority Recommendations

- 2.1. **Anticipate costs of impacts and price them into the system** –To the extent possible, a systems approach should internalize public health externalities. Existing work within the fields of economics should be leveraged in the pursuit of this recommendation.

- 2.2. **Create incentives/rewards for creative solutions** – Incentives are a necessary and integral motivator to encourage innovation and entrepreneurial activity within modern economies. While such programs exist, additional layers of government can be included in their expansion.
- 2.3. **Recognize that things happen piecemeal but work in a common system** – The systems approach should be fully leveraged to evaluate the potential effectiveness of future programs, and to evaluate how existing efforts are contributing to the desired outcomes.
- 2.4. **Piggyback on existing processes** such as environmental and occupational health assessments, health impact assessments, and others.
- 2.5. **Incorporate sustainability and systems thinking into strategic planning and rule-making.**
- 2.6 **Encourage both bottom-up and top-down approaches.**

Workgroup 2. Integrating public health into efforts to cultivate the sustainability of the built environment

There is growing evidence that the built environment is influential in shaping the health and wellbeing for people where they live and work. For example, it is highly influential in shaping daily choices about exercise which is directly linked to these indicators. Public health epidemics of obesity, diabetes, depression and other chronic diseases which can be tied to sedentary lifestyles may thus benefit from infrastructure improvements that enable better choices and encourage movement. Additional impacts include the impact of artificial lights, ubiquitous in the built environment, on natural circadian rhythms that, when disrupted, lead to impact on sleep cycles and mood. Multiple, large scale efforts to study these linkages are currently underway at the federal and state level. Taking these considerations into account when constructing policy or drafting zoning laws will represent a feedback of information that was at the center of the Summit discussions.

The approach of the Built Environment Workgroup centered on the question: **How do we build a sustainable environment that supports healthier people?** The group identified four areas critical to success in addressing that question from an initial list of 23 issues and opportunities to connect public health with sustainable solutions for the future built environment. The Built Environment Workgroup structured recommendations to address each of the four critical areas, as detailed below.

Gap 1. Evidence – Link decisions related to our future built environment to health outcomes through the development of network models that include all drivers that affect health outcomes. Systems models should tell the story with factual data for key links.

Recommendation 1.1. Data and tools should be developed that help better understand and describe the link/network effects between health and the built environment.

Recommendation 1.2. Communication to multiple audiences about the links between health and the built environment is critical. Communication helps policy makers understand the benefits and the community desire for positive health outcomes. It also helps stakeholders understand the relationship between the built environment and public and environmental health outcomes.

Gap 2. Community Engagement – Community buy-in is critical to the success of efforts to enhance understanding about what constitutes a healthful built environment. Community buy-in for healthier built environments requires education and empowerment so the community can participate in the decision-making, messaging, and advocacy process.

Recommendation 2.1. Enable community members with education and empowerment to participate in decision-making, messaging, and advocacy process.

Recommendation 2.2. Facilitate the two-way flow of dialogue and education to understand community needs and wants.

Gap 3. Coordinated Planning – Local land-use and capital investment planning needs to better support an equitable and healthy built environment. A healthy built environment is one that maintains or improves one’s health. The healthy built environment is one defined broadly and that is consistent with the federal livability principles and based on local context.

Recommendation 3.1. Evaluate local ordinances and zoning to determine if they will inhibit or promote sustainable development within the region.

Gap 4. Advocacy and Need for a Long-term Focus – Lack of understanding about the connections between public health and the built environment by the public, elected officials, and decision-makers represents a key gap to implementing sustainable solutions. There is a disconnect between the public and decision-makers (public/elected officials and policy-makers). There is a need for clear articulation and understanding of priorities of societal demands for better quality of life, economic well-being, access to health-related amenities like parks, recreational opportunities, health care, vibrant centers, etc.

Recommendation 4.1. Treat every decision as an opportunity to identify co-benefits, including those derived over time, and communicate those benefits to key stakeholders and decision-makers.

Workgroup 3. Integrating public and environmental health into the manufacture of sustainable products

Understanding and communicating the impact and sustainability of consumer products is a growing priority for many actors within the supply chain, from developers, to producers, to brands and consumers themselves. There are several methods to evaluate a product systematically for impact, the most popular being life cycle assessment (LCA). Rigorous LCAs will deconstruct a particular product, tracing back through the supply chain the physical and energy inputs that were used in its construction, then move forward through the use and disposal phase to estimate the impact of the product during those phases as well. LCA’s are an example of systems thinking in the evaluation of products but they do not focus specifically on public health parameters, instead focusing on physical impacts. The large time, effort and expense required to conduct a rigorous LCA hamstring their widespread adoption in the development of products for market. However, companies like Novozymes are finding ways to overcome these barriers with internal, proprietary data and are using the LCA methodology to assess changes to their product development and manufacturing processes, and doing so at the front end of design. In addition to evaluation, communication is a key component of the marketing space. To cut through the noise generated by the proliferation of sustainability claims, companies like Underwriters Laboratory, with a proven track record in Safety standards development and testing, are looking to bring that expertise and methodology to the sustainability space.

With this promising landscape in mind, the Sustainable Products Workgroup set about their objective to address **the integration of public health into sustainable product development**. The group structured their discussion with the identification of six gaps that serve to limit the widespread adoption of sustainability principles in the development and adoption of sustainable products in the marketplace. After identifying the six gaps, detailed below, the group constructed a matrix of recommendations to address those gaps.

Gap 1. Marketing Strategies - Sustainability is not always included in corporate strategy as a competitive differentiator; these companies are often referred to as a cautious adopter. There is too much focus on operational strategy and insufficient focus on go-to market strategies.

Gap 2. Information - A problem of insufficient information on environmental, social, and health impacts is endemic throughout each phase of the product life cycle or supply chain.

Gap 3. Understanding - There is insufficient understanding of environmental, social, and health impacts by each participant within each phase of the product life cycle or supply chain.

Gap 4. Systematic and Collaborative Approach - There is a need to address issues systemically, which requires all actors from all phases of the product life cycle to address issues collaboratively.

Gap 5. Incentivizing Improvements - Incentives for systemic improvements are not currently aligned; instead, each actor (including consumers) limits their respective analyses to their immediate suppliers and their immediate customers.

Gap 6. Prioritization - To maximize the sustainability of certain products and processes, hard choices may be required not only about marginal improvements in product characteristics, but about which products should be supported or subsidized and which might be discouraged, taxed, or banned. The divergence of value judgments about the needs and opportunities at different stages of the product life cycle limits the ability to focus on potentially ambitious but disruptive solutions.

To address these gaps, the Sustainable Products Workgroup identified four areas for focused attention: education, metrics, processes and methodologies, and public/private partnerships. These are laid out below. In addition, the group focused some attention on parsing out the various actors/producers within the supply chain and over the life cycle of a product, from raw material to disposal. After identifying potential actions for actors at each stage, they offered a set of recommendations for a select group of actors (shown below as Recommendation 5).

Recommendation 1. Education

- 1.1. Education of each participant in within the supply chain
- 1.2. Education of consumers
- 1.3. Education of retailers and institutional purchasing agents
- 1.4. Education of the next generation at universities and K-12

Recommendation 2. Metrics

- 2.1. Agree on LCA methodologies
- 2.2. Create databases of publically available and up-to-date Life Cycle Inventory data

Recommendation 3. Process/Methodology

- 3.1. Develop strategies to capture competitive advantage
- 3.2. Define value propositions with commercial potential
- 3.3. Use open innovation tools to identify market opportunities
- 3.4. Apply ideation methods to select pilot projects

Recommendation 4. Public/Private Partnerships

- 4.1. Identify the advantages of particular initiatives inherent in both the public and private sectors

- 4.2. Identify public and private funding opportunities
- 4.3. Address intellectual property needs – what’s public and what’s private
- 4.4. Facilitate the emergence of stronger public/private partnerships

Recommendation 5. Actor-Specific Recommendations

- 5.1. Manufacturers should help consumers make the connection between sustainability benefits and cost savings (broadly defined).
- 5.2. Gather data on currently successful sustainability programs. This should be conducted by testing and standards organizations.
- 5.3. Set standards to drive unified testing and life cycle approaches that incorporate human and ecological health considerations. This recommendation can be conducted by testing and standards organizations, but may also be appropriate for regulatory agencies.
- 5.4. Ensure transparency of the process and results. This should be integral to the work of any testing and standards organization.
- 5.5. Brand owners and designers should build sustainability into standard design parameters for new products and services.
- 5.6. Brand owners and designers should also create a standardized tool set—including questionnaires, LCA methodologies, and health impact assessments—that can be used to improve the rest of the supply chain.

About The Collaborative

The Research Triangle area of North Carolina is unique with respect to the number of world-class organizations focused on environmental health research and policy and has become the epicenter of contemporary thinking about environmental health. The Collaborative is a non-profit organization supporting a united environmental health resource that connects organizations and institutions; links research and policy; and joins government, academia, industry, and public interest groups to mutually consider, discuss and debate the future of environmental health on a regional, national, and international level. It provides a neutral forum to host candid discussions and to provide advice on the most significant issues facing environmental health and related public health.

It will host an October 2012 **Shale Gas Extraction Summit on Public Health Implications and Prevention**.

In September 2010, the Collaborative hosted a highly successful summit focused on **America’s Healthcare Policy through the Lens of Environmental Health**. A broad-based group provided increased clarity about the meaning of “environmentally-related disease prevention” and how it relates to the national healthcare debate and cost savings. It developed a work product recommending elements of an action plan (e.g., policy, tools, outreach and education suggestions) for preventing adverse environmental health impacts (e.g., mortality/morbidity and associated healthcare costs) and promoting beneficial environmental health impacts. Speakers and participants contributed articles to a special section in North Carolina Medical Journal (March/April 2011) and Health Affairs (May 2011). The summit participants also generated and distributed a recommendation document to key policy makers starting in May 2011.

In October 2009, the Collaborative hosted another invitation-only working summit for 150 attendees focused on **Environmentally Responsible Development of Nanotechnology**. The Summit identified critical issues in nano-enabled product development and manufacturing and explored the nanomanufacturing landscape; so that businesses can overcome barriers to success related to environmental and occupational health concerns. The outcome of this

meeting was a guidance document to highlight these critical issues and provide business and policymakers with recommendations about how to successfully address them.

In November 2008, the Collaborative hosted a kickoff summit focused on **Pharmaceuticals in Water** and identified innovative solution-oriented recommendations emphasizing research needs, policy changes, education, prevention/intervention programs and other public health solutions/actions. It has worked with a Congressional committee on some related legislation, presented at the 2009 annual meeting of the American Public Health Association and had a submission accepted for publication by Environmental Health Perspectives in its March 2010 issue.

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