

Community Environment and Health Assessment and Action Roadmap

Introduction to the Roadmap

Purpose of the Roadmap:

Communities across the nation are getting organized and building partnerships to address local environmental concerns. This Roadmap is designed to help this effort by providing an introduction and Roadmap to help communities and community partnerships get a comprehensive picture of local assets and local environmental risks and impacts, identify and unite around clear and effective priorities, and get to work to improve local environments and community health.

Goals of the Roadmap:

This Roadmap is designed to help communities achieve the following four goals:

- Improve the understanding of environmental and environmental health impacts and risk factors in the community
- Build the consensus among all sectors of the community that will be needed to take effective action
- Mobilize all sectors of the community and its partners to take effective actions to reduce impacts and risks
- Build the long term capacity of all sectors of the community to understand and reduce environmental impacts and risks

Origin of Roadmap

This Roadmap is the result of a joint NEJAC/EPA effort to develop a practical tool for communities that incorporates the perspectives of the NEJAC report on cumulative risk¹ and EPA's Framework for Cumulative Risk Assessment.² With permission of the author, the Roadmap also incorporates and builds on the Community Environmental Health Assessment Workbook published by the Environmental Law Institute.³ The Roadmap also incorporates input from the participants in the training session on community risk held at EPA's National

¹Ensuring Risk Reduction in Communities with Multiple Stressors: Environmental Justice and Cumulative Risks/Impacts, National Environmental Justice Advisory Council Cumulative Risks/Impacts Work Group, Draft Report, January 31, 2004

²Framework for Cumulative Risk Assessment. U.S. Environmental Protection Agency, Office of Research and Development, National Center for Environmental Assessment, Washington Office, Washington, DC, EPA/600/P-02/001F, 2003.

³Community Environmental Health Assessment Workbook, A Guide to Evaluating Your Community's Health and Finding Ways to Improve It. Environmental Law Institute, 2000

Differences with existing assessment guides and Roadmaps

This Roadmap differs from previous assessment guides or outlines in two ways. First, it incorporates the “bias for action” perspective of the NEJAC report on cumulative risk. This means that the Roadmap is organized to encourage partnerships to take actions to reduce risk as soon as possible. The “bias for action” does not mean that collecting and analyzing information are not important. In fact, the community’s work to improve its understanding of risk is an essential part of a “bias for action”. Without a shared understanding of risk, mobilizing all sectors of the community will not be possible and without a clear understanding of the sources of risk, community actions may not be focused where they can do the most good. The Roadmap incorporates the bias for action by encouraging communities to take action on known risks from the start and by suggesting practical ways to collect and analyze the information they will need to build consensus and target risk reduction efforts where they will do the most good.

The second way in which this Roadmap differs from most others is in its attempt to view risk from the community perspective. The Roadmap outlines a method to develop as comprehensive an understanding of local environmental risks and impacts as possible, including both considerations of combined concerns resulting from multiple sources and the contribution of community vulnerabilities to risk. This comprehensive overview of concerns gives the community the information it needs to ensure that efforts to address concerns will do the most to improve the health of the community and its environment.

How to use the Roadmap

- How can the work be done in a way that helps to build an effective partnership? Broad and effective partnerships are the key to getting things done. Partnerships are the source of resources and information and they are the key to mobilizing the whole community to take action. Because strong partnerships are key, all the work described in this Roadmap should be done in a way that builds the partnership and the trust among the partners. This can be accomplished if everyone in the partnership has the opportunity to be heard and to participate fully as equals in the work and decisions of the partnership. Since members of the partnership will come to the partnership with different backgrounds and resources, the partnership may have to find ways to compensate for these differences. All the time and effort required up-front to build real trust and a strong partnership will pay off in the long run with the whole community mobilized to take actions that make a difference.
- Do the steps need to be done in order? The order in which a community takes the steps listed

⁴How to Participate and Lead New Community Based Efforts to Address Environmental Health Concerns, Part 2: Identifying, Understanding, and Addressing Risks. Sessions presentations included in conference proceedings at: <http://www.epancic.org/2004/proceedings.cfm>

below will vary depending on the situation in the community. For example, in some communities residents will want to begin with step two and develop a first draft summary of environmental and health concerns and community assets (possibly in the form of a community risk/impacts/assets matrix) before starting the work to form a partnership. In other communities, the work to form a partnership will come first and all sectors of the community will work together to complete step 2. Communities will have use their judgement to decide on how to sequence the steps, choosing the approach that best helps to compile the necessary information and build the consensus and broad partnership that will be needed to reach community goals.

- What should the scope of the environment and health assessment be? The definition of environmental will vary from community to community so the scope of the assessment will also vary. In communities that have ongoing development, crime prevention, or education projects, the scope of the environmental health assessment may stick to traditional environmental concerns. But in communities without these efforts, the need to interpret environment more broadly to include things such as jobs, lack of adequate health care, and crime may be necessary. The process will need to be flexible to meet community needs and accept the community definition of environment. There may be a need to bring other partners to the table to address all the issues and traditional environmental risks may be addressed as a part of a broader community effort. And even in communities that define environment more narrowly, addressing vulnerabilities may also broaden the scope of the work.
- Should all communities do an assessment? Taking a comprehensive approach to environmental and health assessment is especially valuable as a tool to get everyone in a community on the same page in their understanding of environmental and health risk. A comprehensive assessment also helps a community to set priorities and focus resources where they will do the most good. But some communities may already agree on the need to address a particular priority risk. Or some communities may need a fairly long trust building process before they can agree to work with all stakeholders to get the more complete view of risk. So making the judgement about when to do a comprehensive assessment to improve the environment and health of the community will depend on the situation in each community.
- How to incorporate a bias for action? The Roadmap will recommend that the steps below be completed from existing data and the knowledge of the participants in a short time frame so that priorities that everyone can agree on can be quickly identified and actions can be taken to reduce risks and impacts. The first review will also identify data gaps and areas where there will not be consensus so once preliminary priorities are identified, the partnership will organize efforts to fill in significant gaps at the same time as taking action on the identified priorities. Once the community has new information, the assessment steps will need to be repeated using the more complete information so that the priorities and actions can be refined or redirected as needed.

The basic elements of the process described in the Roadmap

- ▶ **Organize** a broad partnership needed to reach community goals
- ▶ **Collect** the information needed to understand community impacts and risks

- ▶ **Analyze** the information to identify community priorities and to identify options for reducing risks
- ▶ **Mobilize** the community and its partners to take action
- ▶ **Evaluate** the work of community, measure progress, and begin new effort to address remaining risks

The Roadmap: Ten Steps to a Healthier Community and Environment

- 1) Build a collaborative partnership that is able to identify environmental risks and impacts, build consensus, and mobilize all the resources necessary to achieve community goals
- 2) Identify the environmental, health, and related social and economic concerns of the community
- 3) Identify community vulnerabilities that may increase risks from environmental stressors
- 4) Identify community assets
- 5) Identify the concerns and vulnerabilities that everyone agrees need immediate action and begin work to address these concerns and vulnerabilities
- 6) Collect and summarize available information on stressors, concerns and vulnerabilities to estimate levels of concern. Identify information gaps where the information on stressors, concerns and vulnerabilities is missing or inadequate
- 7) Identify priorities for possible community action and establish baseline indicators and standards
- 8) Identify and analyze options for reducing the priority concerns and vulnerabilities and for filling information gaps
- 9) Decide on an action plan to address concerns and to fill gaps in information and mobilize all sectors of community and community partners to carry out action plan
- 10) Evaluate the results of community action, analyze any new information that has been collected, and start process again to reset priorities as needed and to develop new plan for action and, if needed, for information collection

Discussion of Roadmap steps:

- 1) Build a collaborative partnership that is able to identify risks and impacts, build consensus, and mobilize all the resources necessary to achieve community goals

The Partnership members should consist of a broad cross-section of the community who are concerned as well as involved with the environment, human health and socioeconomic health and well being of the community.

Partnerships will need to make special efforts to ensure that all sectors of the community participate fully in this effort. Special efforts to involve some sectors of the community may be necessary, especially sectors not used to being involved in partnership efforts, such as the affected residents or small businesses in the community. Partnerships should lay out clear plans for involving these members of the community and provide the support they need to participate fully in all aspects of the partnerships work and in the leadership of the partnership. The success of the partnership will depend on its ability to fully engage all sectors of the community.

POTENTIAL PARTNERSHIP MEMBERS

Community members from the focus community
Minority members of the focus community
Local environmental justice organizations
Local, regional and national environmental NGO organizations
Health care providers
Faith based organizations
Local churches
Business organizations
Civic organizations
Local economic organizations
Educational Institutions (Schools, Universities and Colleges)
Community development groups
Environmental and natural resource agencies (local, state and federal)
Health Agencies (local, state and federal)
Elected officials
Local governmental agencies

Note: Building partnerships may create unique challenges. The following are references to documents that will provide assistance in partnership building processes. [to be added]

- 2) Identify the environmental, health, and related social and economic concerns of the community including
 - community environmental health concerns
 - disease incidence in the community
 - sources of pollution (a separate worksheet will be used to record details of releases from sources, i.e., chemicals and release amounts)
 - routes of exposure
 - chemicals and biological health and ecological hazards

- effects of chemicals and biological hazards identified in community
- social and economic conditions

3) Identify community vulnerabilities that may increase risks from environmental stressors

Vulnerability recognizes that disadvantaged, under served, and overburdened communities have pre-existing deficits of both physical and social natures that make the effects of environmental pollution more, and in some cases unacceptably, burdensome.

The concept of vulnerability provides the added dimension of considering the nature of the receptor population when defining disproportionate risks or impacts. Understanding community vulnerabilities will also allow the community to identify effective options for risk reduction. Sometimes addressing vulnerabilities, such as access to health care, can be a very effective way to reduce risk.

A community or sub-population of a community may be vulnerable if it is more likely to be adversely affected by a stressor than the general population. The vulnerability factors are divided into four categories: susceptibility/sensitivity, differential exposure, differential preparedness and differential ability to recover.

- Sub populations may be susceptible or sensitive to a stressor if it faces an increased likelihood of sustaining an adverse effect due to a life state, an impaired immune system, or a pre-existing condition.
- Sub populations may experience differential exposure due to living or working near a source of pollution that causes exposure to a higher level of pollution than the general population.
- Sub populations that are less able to withstand environmental insults experience differential preparedness.
- Sub populations that experience differential preparedness have differential abilities to recover.

VULNERABILITY FACTORS

Susceptibility/Sensitivity

- Genetic predisposition to disease
- Effects on fetus, infants and children
- Effects of aging
- Compromised immune system
- Preexisting health conditions

Differential Exposure

- Proximity to pollution sources
- Employment in high exposure/dangerous jobs

- Past exposures
- Multiple routes of exposure to one chemical
- Multiple exposures to different pollutants
- Subsistence consumption
- Discrimination
- Lack of information
- Lack of social capital

Differential Preparedness/Ability to Recover

- Poor nutrition
- Compromised health/immune system
- Poor or no health care
- Cultural practices
- Lack of recreational facilities
- Poor community services
- Low income
- Low education
- Dilapidated housing
- Emotional stress
- Crime
- Varmin (insects and rodents)
- Unemployment or underemployment
- Discrimination
- Lack of information
- Lack of social capital

4) Identify community assets

Communities with large numbers of environmental justice, environmental, social and economic problems and stressors are still communities with a large number and variety of assets. In order to build on the existing foundation of the communities, a list of community assets should be developed. This list of assets will be key to developing the community's plan for reducing risks.

EXAMPLES OF COMMUNITY ASSETS

- Strengths
- Skills
- Capacities
- Communication
- Culture
- Longevity
- Leadership

Coalition Building
Neighborhood Associations
Religious Institutions
Businesses
Civic and Community Leaders
Political Abilities
Community Building Resources
Human Resources
Outreach
Mobilize Actions
Historical Information

5) Identify the concerns and vulnerabilities that everyone agrees need immediate action

Step 2 identified environmental, health and related social and economic stressors and concerns. Step 3 developed an understanding of community vulnerabilities that increase risks from the stressors and concerns identified in Step 2. Working as a group, the stressors, concerns and vulnerabilities should be evaluated and those that everyone (or the majority) agrees need immediate action should move forward to Step 8 to identify options for action. Since there is agreement on these concerns, risk reduction actions should begin as soon as possible. This will allow the community to begin work as quickly as possible on key concerns. At the same time as the Partnership addresses these key concerns, the remaining stressors, concerns, and vulnerabilities will be analyzed further to identify additional priorities for action. Once additional priorities are identified, the work that has begun to address key concerns can be adjusted as necessary. The remaining stressors, concerns and vulnerabilities will need further analysis and will be dealt with under Step 6.

6) Collect and summarize available information on stressors, concerns and vulnerabilities to estimate levels of concern. Identify information gaps where the information on stressors, concerns and vulnerabilities is missing or inadequate

The next step in the process to identify priorities and develop a plan for action will be to take the information on stressor and vulnerabilities collected in steps 2 and 3, and, using available information, estimate the potential that they have to affect the health of the community or its environment. In other words, the partnership will now use available information to estimate the level of concern resulting from each of the stressors, impacts, and vulnerabilities affecting the community. Levels of concern resulting from combinations of stressors, impacts and vulnerabilities will also be considered if appropriate. If there is not enough information available to estimate the level of concern resulting from a stressor, the partnership will use its best judgement to estimate the potential harm that a stressor may have on the community or its environment. For example, if there is a significant amount of old housing in the community but insufficient information on blood lead levels to determine how many children are affected, the partnership would likely identify the potential concern from lead paint, given

the likelihood of exposures, as very high. The estimates of concern, and potential concern where there are information gaps, will be used in the next step to identify the priority concerns.

To estimate the level of concern due to stressors, the Partnership will collect all available information. This will include information from members of the partnership, especially those directly affected by a stressor. Information on stressors from more formal studies of risk, if they are available, will also be collected. Information on stressors could come from studies done to estimate the risk from a stressor in the community, as well as estimates of risk that have been done for other similar communities or national studies done to estimate risks in communities. Estimates of risk can be quantitative, such as an estimate in the form of a probability, e.g., a 2.6×10^{-5} cancer risk, or qualitative, such as estimates using a high-medium-low scale. The levels of concern resulting from vulnerabilities can be estimated in the same manner. For example, a community can estimate the level of concern resulting from the lack of access to health care.

Communities beginning to develop an understanding of environmental risks and impacts in the community are likely to find many areas where they will not have adequate information to estimate risks. Identifying these information gaps and developing an estimate of the potential that the stressors and impacts may have on the community are essential parts of this exercise. In addition to taking action to reduce known risks, the community will also identify the areas that need information. These can be identified as priorities for taking action needed to fill the gaps as quickly as possible.

Communities will collect and summarize all the available information on concerns and adopt a method, such as a numerical 1-10 or a high to low scale, that will allow all the concerns to be compared. The ranking method used by the community will need to take into account the severity of the impact, including the vulnerability of the affected people, as well as the number of people exposed or the extent of the environment affected.

At this point, it will also be important for the Partnership to include considerations of the level concern resulting from all stressors and vulnerabilities combined (the cumulative risk) as well. Once the estimation of known concerns has been completed, the Partnership will have a sense of the magnitude of the combined concern resulting from all stressors on the community. This information, in the form of a written summary or a matrix displaying all concerns due to stresses on the environment and as well as a summary of the health and vulnerabilities of the community, can be used to determine the level of effort and resources that will be used to address these risks.

In addition, if the information is available, the Partnership will also want to consider the aggregate concern and impact due to the release of a single chemical from multiple sources and the total concern resulting from all the chemical releases from a single source. The combined concern and impact from multiple sources with the same effect or impact, such as

irritation of the respiratory tract, may also provide useful information for setting priorities.

Information on the risks and impacts of stressors will come from all the members of the partnership. Residents of the community, local businesses, and local doctors and public health staff will have important information to help estimate levels of concern. Government staff and university staff can be relied on to identify any existing studies of the community and of similar communities. The Partnership will need to use all of its members to complete this part of the process.

Once completed, the Partnership will have, for each stressor or combination of stressors, an estimate of the level of concern using the scale adopted by the community, a description of the impacted community members or impacted environment, and a list of stressors that do not have adequate information to estimate of the potential impact they might have. Organizing all of this information in a table may help the partnership use the information to set priorities in the next step of the process.

7) Identify priorities and establish baseline indicators and standards

To complete these steps, the partnership will take all the information on risk, impacts, and vulnerabilities that has been assembled up to this point, and, through discussion, set the community priorities that will be used to develop an plan for possible community action. In other words, the task now is take the information and look at it to find what the partnership thinks are the most important things the community needs to address to improve the environment and environmental health of the community. These steps of the assessment and planning process will be a great opportunity for the members of the partnership to learn about each other and to work together to shape community goals.

At this point, considerations of whether or not something can be done about an issue should be set aside. This priority setting/ranking exercise will be based strictly on how important the concern is to the health and quality of life of the community and its environment. Considerations of the practicality of doing something about the priorities will be a key part of the next steps, the development and implementation of an action plan. It is important for a community to know about significant concerns, even if it is not possible to do something about some of those concerns immediately.

This ranking exercise will depend heavily on your community's goals and values. As a result, different communities may make different choices on priorities because of their different goals. The partnership will need to consider and rank issues that are very different, so the discussion will be difficult to quantify. Only good common sense and a clear view of community values will provide a basis for making the judgements necessary to set community priorities. It will also be important, as the discussion proceeds, for members of the partnership to keep in mind that the goal is to reach the agreement on the priorities that best meet community needs and that help build the consensus needed for mobilizing

everyone to take action.

Here is a table with some examples to illustrate how you might organize the information needed to set priorities.

risk, impact or vulnerability	level and type of risk, impact or vulnerability	description of extent of impact (Who and how many are affected? Extent of eco impacted?)	information used to rank, certainty and gaps in information
Diesel particulates risk to human health	high risk to human health	Impacts most members of community; high exposure along truck routes; elderly, children, and asthmatics especially vulnerable	based on national studies of similar exposures; need more detailed information on local truck traffic
Lack of access to health care vulnerability risk to human health	high level of vulnerability for human health	High impact on elderly and children. 80% of community has inadequate access to health care	detailed information on access to health care used
Drinking water from community wells risk to human health	high risk to human health	Small number of households, about 50, on private well water	little information available on well water
exposure to lead in water/paint/soil risk to human health	high risk to human health	Impacts most members of community; 80% in homes built before 1972	Based on incomplete childhood blood level screening and no household water sampling
Odor from water treatment impact on community quality of life	high impact to quality of life	Impacts all members of community	well known impact

Once you have assembled all the information rank the impacts/risks/vulnerabilities, you will need to find some way to rank them to identify priorities. Remember, you will not be able to do everything at once, so you will need to choose priorities so that your efforts will do the

most to improve community health and the community's environment. You could rank your concerns, or group them into high, medium, and low priority categories. The number of high priority concerns should be reasonable. Not so many that addressing them all will be impossible. The high priority concerns could include risks, impacts, vulnerabilities, or information gaps. For example, you could choose lead exposure as both a priority risk and a priority information gap. Give a high ranking to all the concerns that you think need to be addressed by the action plan that you will develop next.

You may also need to establish a place for those concerns that you were not able to reach agreement on. If some members of the partnership rank a concern high and some rank it low, your action plan will need also need to include a process for coming to agreement on this issue.

8) Identify and analyze options for reducing the priority risks and vulnerabilities

Once the community has identified its priority concerns and information needs, the next step will be to find out what can be done to address these priorities. For priority risk concerns, the partnership will need to explore the available options for reducing risk. For example, if diesel particulates were identified as a priority, the community will need to do some research to identify approaches that have been developed to address this issue, such as retrofitting diesel engines on public and private truck and bus fleets, changing traffic routes, or restricting idling. Programs for addressing exposures to diesel particulates from school buses are also available and information on these programs and how they work can be collected. Information on risk reduction benefits, the costs of risk reduction efforts, the community resources that will be needed to implement the various approaches, and the assets and resources available in the community to address concerns will need to be determined. The resources needed to reduce risks will vary depending on the source. For example, some risks, such as indoor exposure to tobacco smoke, might be effectively addressed through education while other risks, such as diesel retrofits, will also require significant investments for new technology. Some risks may not be able to be addressed by a single community and require a longer term effort to work with other communities. For example, the siting of major highways or the clean up of a river, stream, or lake shared by other communities may require efforts by multiple communities. A similar effort will be needed to develop options for collecting missing information will need to be done. Information on the different approaches for collecting information and the resources that they will require can be collected and summarized. Once all the information on the options for addressing the community's risk and information collection priorities has been collected, it can be put together and summarized to help the community choose the actions they will take. Each community will have to use its best judgement to find the proper balance between the work to collect information on options and the work to reduce risk and fill information gaps. On the one hand, requiring too much information on available options may delay getting to action unnecessarily and on the other hand, too little time spent on developing options may result in taking actions that are not as effective as they could be in reducing risk.

[Roadmap will reference available programs and resources for risk reduction and pollution prevention, as well as ways to learn about the work of other communities.]

- 9) Decide on an action plan to effectively reduce risk and to fill gaps in information and mobilize all sectors of community and community partners to carry out action plan

Now that your community partnership has prioritized its concerns and information needs and collected and summarized the information that will be needed to choose a plan for work, the next step will be to decide on a plan of action and mobilize the community to begin work. Choosing the plan for work will depend on many factors particular to each community. Depending on the resources that you can mobilize in your community and partnership, you may want to organize a number of teams to address multiple priorities. You may also need to develop a short term plan to begin some immediate actions and a long term plan to address priorities that will require more time to collect needed resources. Some communities may decide to put information collection first to help build consensus or to make sure that significant risks have not been overlooked. Others may focus primarily on risk reduction and put less emphasis on filling gaps in information. Developing a plan that allows the community to get some early successes while pursuing longer term goals may help to build community support for the work to build a healthy community and environment. Most importantly, to achieve the best results, make sure that your plan takes advantage of all your local assets and mobilizes as many members of your community and partnership as possible. Getting everyone involved in building a healthy community will not only get results, it will also give everyone a chance to learn about the local environment and acquire the skills and knowledge they will need to sustain the long term effort that will be needed to build a healthy community.

- 10) Evaluate results of action and analyze new information and start process again to reset priorities as needed and to develop new plan for action and, if needed, for information collection

To make sure that your efforts are getting the results that you want, it will be important for the partnership to find effective ways to measure progress. For each priority and action plan, the partnership should develop a measure that can be used to gauge progress and evaluate the effectiveness of community action. Reductions in releases, exposures, and risk, and reductions in health effects can all be used to measure progress. It will also be important to try to measure progress in building community capacity to understand and address risks. To be successful, communities will need to measure their progress, learn from their experiences, and adjust their work to build on their successes and learn from their mistakes.