Health Impact Assessment in the North Slope Borough: A Guide for Stakeholders, Decision-Makers and Project Proponents

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1. Introduction / How to Use This Guide

Purpose of This Guide

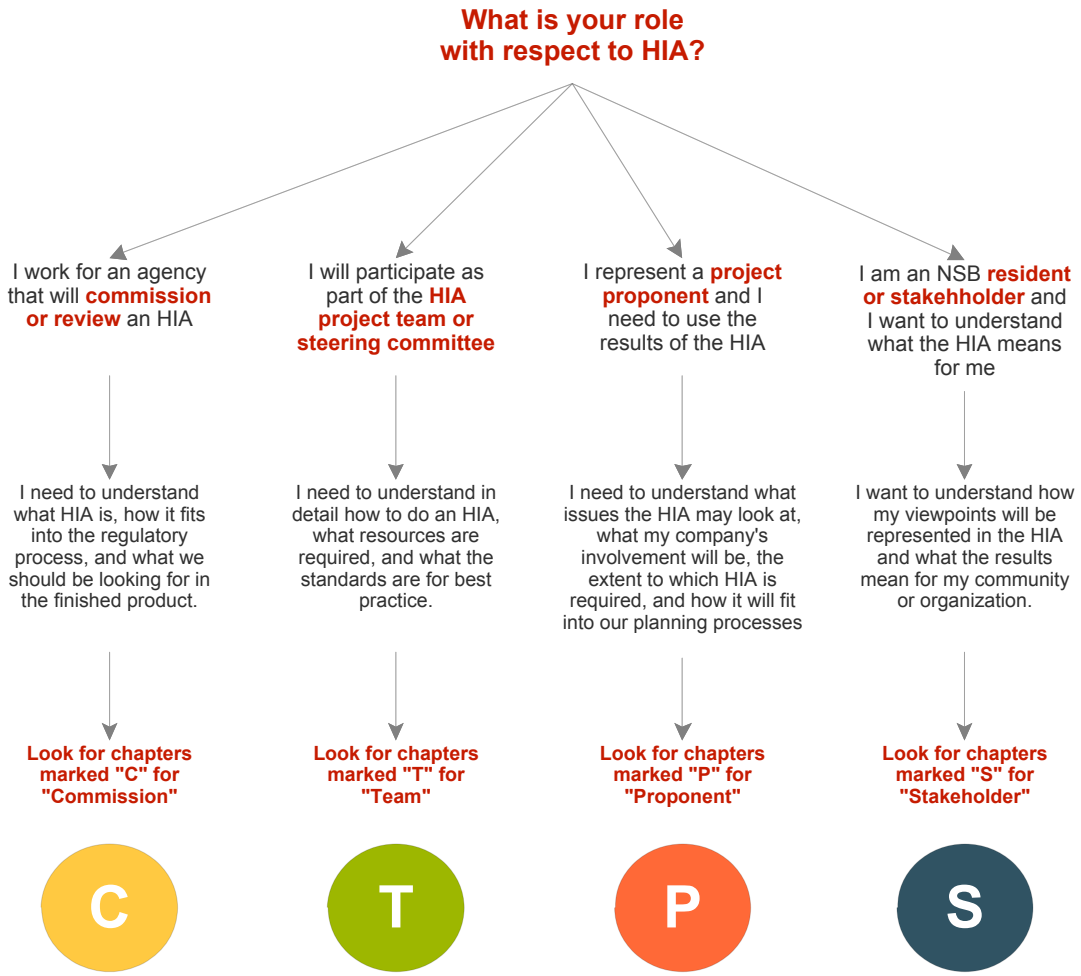
Health Impact Assessment (HIA) is one tool that can be used to identify and mitigate the community health impacts of natural resource development projects. This document is intended to provide guidance about HIA to stakeholders who may be involved or affected, including North Slope Borough (NSB) residents and community organizations; project proponents; people who will conduct an HIA; and personnel in the NSB Department of Health & Social Services and other organizations who may need to commission or review an HIA. This guide will help these stakeholder groups understand what they need to know to ensure that community health concerns are adequately addressed.

How to Use This Guide

There are a number of different stakeholders, roles and processes involved in an HIA, and thus many different informational needs. Although there is some overlap—for example, ideally everyone should understand what an HIA entails and how stakeholder input fits in—not everyone has the same perspective or requires the same level of detail. This document, therefore, contains HIA guidance that will meet the informational needs of each user group, including:

- Those who are working for an agency that will **commission or review** an HIA;
- Those who will **participate as part of the HIA team** or steering committee;
- The **project proponent**, who will need to use the results of the HIA, and;
- **NSB residents** or stakeholders, who want to understand what the HIA will mean to them.

To make the most of this guide, and to quickly and easily find the information that is most relevant to you, it may be helpful to identify your role in the diagram on the next page and then identify the chapters that contain your respective symbol (located at the top right hand corner at the beginning of each chapter).



Authorship

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This document draws on material that was developed for the draft document *Health Impact Assessment (HIA) for Natural Resource Development in Alaska: Collaborative Guidance.*

2. Resource Development Projects and Health: What's the Link?

What "Health" Means

Health is a concept that is difficult to define. Most contemporary definitions of health acknowledge that good health is different than merely an absence of disease, and that it incorporates physical, mental, and social well-being (World Health Organization 1986). Healthy people are able to cope with everyday activities and to adapt to their surroundings.

Health is largely determined by where people live, the state of their surroundings, their income and education levels, their jobs, and their relationships with friends, family and the larger community. These critical factors are often called '**health determinants'** (or determinants of health) because of their roles in determining or shaping health in individuals and communities. Health determinants comprise the social and environmental conditions that cause or contribute to biomedical **health outcomes** in individuals, such as illnesses (e.g. hypertension or gastrointestinal illness); mental health states (e.g. depression or anxiety); and injuries or traumas (e.g. broken legs or concussions).

HIA uses a broad definition of health that focuses on potential impacts to both health outcomes and health determinants. This approach conforms to local expectations for what constitutes a sufficient examination of human health within the regulatory process: North Slope residents, the North Slope Borough municipality, the Alaska Inter-Tribal Council, the Iñupiat Community of the Arctic Slope, the Environmental Protection Agency (EPA), and the National Research Council have all advocated strongly for the inclusion of a more systematic and broad-based appraisal of human health concerns in planning processes.

How Can Resource Development Projects Affect Health?

In this document, the term 'resource development projects' is used to refer to large-scale industrial projects that extract or process natural resources, such as oil and gas developments, large mines, and forestry projects. Because these types of projects directly or indirectly influence many important health determinants—such as jobs and income, availability of housing, food systems and features of the natural landscape—they have the potential to shape community health. Not all these changes are bad: these projects present opportunities to improve health as well as potential health risks for affected communities. Careful planning is essential to maximize the potential benefits for communities and to minimize any unanticipated harm.

The health effects of resource development in Alaska have been a longstanding concern of Iñupiat and other Native Alaskan communities. Although many communities have supported resource development projects, which provide jobs and fund municipal services and infrastructure in the region, some residents have also raised concerns about the impact of such projects on health. In addition to concerns ranging from exposure to contaminants to social problems, large

resource development projects also have the potential to profoundly impact the Iñupiat way of life, since many communities are dependent on subsistence hunting, fishing and whaling (Wernham 2007).

Health Issues

There are a wide range of health-related issues that have the potential to be influenced (either positively or negatively) by resource development activities. A number of these health issues are described below. These include both health outcomes and health determinants, as described above.

Infectious disease: Infectious diseases are illnesses that are transmitted from one person to another through direct contact, through the air, or through contaminated food, water or surfaces. Also described as "communicable disease", infectious diseases include sexually transmitted infections, respiratory infections and gastrointestinal infections.

Chronic disease: Chronic diseases are health conditions such as arthritis, diabetes, cardiovascular diseases and cancer that persist over a long period of time. They detract from quality of life, often trigger other health problems, and are costly to the individual and the health care system.

Injuries: Injuries can arise from unintentional sources such as traffic collisions, falls, and drowning, or be inflicted intentionally through violence or self-harm. Injuries can be minor, disabling or fatal.

Mental health / wellbeing: Mental health is "a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community" (World Health Organization 1986). Mental wellbeing underpins a person's ability to function and thrive.

Maternal and child health: Maternal and child health refers to the health of mothers during pregnancy, birth and the postpartum period, and the health of infants, children and youth. Children comprise a group that is particularly vulnerable to biological, environmental and social stressors.

Exposure to hazardous substances: Hazardous substances have the potential to adversely affect health. Whether or not there are any health effects depends on several factors, including: the nature of the hazard; the amount and duration of exposure; and the susceptibility of the person who is exposed. Several populations are at higher risk, including children, people with pre-existing respiratory disease, people living in close proximity to industrial sites, and people who live off the land.

Food security and nutrition: Food security describes the ability of a family or individual to access nutritious, safe and culturally appropriate foods in sufficient quantity to maintain good health. Nutrition refers to the nourishment that is provided by a person's diet.

Housing: Housing that is safe, affordable and secure is a prerequisite for living a healthy life. Poor housing conditions and unaffordable housing can increase the risk of many physical and mental health problems.

Employment and income: Employment and income affect health through their influence on overall living conditions, psychological functioning, and health-related behaviours (such as diet, physical activity and tobacco use). The distribution of wealth within a society is also important; the larger the income gap between the rich and the poor, the worse health is for the entire population.

Education: Education affects health because it is closely tied to income, increases the understanding and adoption of health-promoting behaviours, and enables people to see and influence the societal factors that shape their own health.

Cultural wellbeing: Cultural wellbeing is the vitality that communities and individuals enjoy through participating in recreational, creative and cultural activities; and the freedom to retain, interpret and express their arts, history, heritage and traditions.

Health care services: Health care services include hospital services, health care clinics, and allied health services such as pharmacy, public health, mental health and addictions services, laboratory services, health promotion and other specialty areas. While these services do not create health, they are important in maintaining an optimum level of health in the population.

Project Components

Resource development projects—whether oil and gas, mining, LNG facilities, pipeline construction, transmission lines or others—have a number of similarities in terms of how they affect health. The list below describes attributes that are common to many resource development projects, and how each might be linked to health outcomes. These are not the only aspects of projects that can affect community health, but do cover off a number of major influences.

Employment and economy: Resource development projects are commonly a source of employment and income, either through direct jobs or through the creation of indirect employment opportunities. These opportunities can benefit local workers and businesses, but it is also important to consider how employment and income are distributed within the community, and who may benefit from these opportunities. Under some conditions, resource development projects may also drive up the cost of living and create pressure and additional expense to local services such as schools, emergency services, and public infrastructure.

Transportation: Most resource development projects require that people and materials are transported by road, boat or plane. Project traffic can have an effect on quality of life through noise, dust and safety issues. On the other hand, improvements in the local road network can provide better access for emergency response vehicles, and greater access to hunting grounds, jobs, or social networks.

Noise: Noise can originate from a number of different sources during the life of a development project and vary between construction and operation phases. Common sources

of noise include air, road and vessel traffic, as well as noise from equipment and other project components during operations. Acute loud noise and chronic low-level noise are associated with adverse health effects in humans including annoyance, interference with thoughts, feelings and activities and disturbed sleep.

Environmental emissions: Resource development activities have the potential to produce emissions to water, air, or soil through intentional activities (such as flaring or discharge of drilling fluids), as the by-product of construction, excavation, or human habitation, or through accidental spills or releases. These may affect individuals directly or they may affect the biophysical environment, which can indirectly affect individuals and communities.

Mobile workers: Many resource development projects bring in a substantial portion of their workforce from outside the local area. Temporary mobile workforces may be housed in worker camps, or in hotels or other local accommodations. These mobile workers may be either a welcome addition, bringing vitality, support and employment to local communities, or they may be seen as causing problems from their economic and social influences. Project factors that influence the effects can include the number of workers, where they are housed, and the type of training and management measures (e.g. code of conduct, camp requirements) put in place to ensure the safety of workers and local communities.

Changes to the environment: In the North Slope Borough, the local environment is a critical resource for local residents for social, cultural, economic and subsistence purposes. Because of the footprint of project activities, resource development projects frequently change the environment around them. There may be changes to the visual environment, impacts on plants, impacts on breeding, calving or hunting grounds, or changes in access for local populations, for example.

The table below gives an indication of some potential interactions between the components of resource development projects and various health areas. It should be noted that some of these potential interactions are positive for health, and some are negative for health. The table provides examples only; the list of interactions is not comprehensive, and not all effects will be seen for all projects.

Note: **+** indicates potential health benefit and **–** indicates potential health risk.

	Economy and employment	Transportation	Noise	Environmental emissions	Mobile workers	Changes to the environment
Infectious disease	- Employment prospects lead to overcrowding and transmission of infectious disease				- Transmission of infectious disease between mobile and local workers - Transmission of infectious disease in work camps	
Chronic disease	+ Employment and income linked with lower risk and better management of chronic conditions	- Vehicle emissions causing acute or chronic respiratory illness		- Exposure to emissions can contribute to acute and chronic illness		
Injury	+ Resource development jobs generally carry low risk of injury compared with some other industries and occupations	- Traffic collisions + Improved access for emergency vehicles	- Noise-related hearing impairment			- Increased distance to reach subsistence resources poses safety risk
Mental health / wellbeing	+ Employment contributes to mental wellbeing - Increased disposable income can lead to substance misuse	+ Better access to services and improved quality of life - Stress and annoyance related to increased traffic.	- Stress and annoyance related to noise from construction, traffic or operations	- Stress and annoyance due to perception of contamination of land, plants, animals or water	- Influx of mobile workers can lead to increased presence of alcohol and drugs	- Distress caused by change in environment
Maternal and child health	+ Improved family income benefits health of other family members - Strain on family life from shiftwork	+ Increased access to health services in high risk situations	- Noise disturbance can decrease school performance	- Children and pregnant women are at higher risk for adverse effects of exposure	- Increase in pregnancies from local contact with mobile workers	
Exposure to hazardous substances	+ Improved housing quality can lead to less hazardous indoor exposures	- Potential for spills if hazardous materials transported by truck		- Exposure to contaminants		
Food security and nutrition	+Increased purchasing power for healthy foods + Ability to purchase hunting/harvesting equipment - Local inflation results in food insecurity	+ Increased access to subsistence resources from improved road network	- Noise may cause changes in movement patterns for land animals or sea mammals	- Exposure to contaminants that bioaccumulate in the food chain - Avoidance of traditional foods		- Decreased availability of, access to or quality of subsistence food resources - Concerns over contamination lead to avoidance of traditional foods

Housing	+ Extra funds for housing repairs, improved standard of living - Low housing supply, overcrowding and inflation of rent				- Increased demand for local housing leading to short supply and overcrowding	
Employment & income	+ Diversified local economic opportunities +Increased local employment opportunities (direct and indirect)	+ Improved road network offers opportunities for economic activities			+ Population influx increases prosperity of local businesses	- Development may limit ability to engage in traditional economic activities
Education	+ Training opportunities - Early school dropout in favor of industry jobs		- Noise can lead to decreased school performance			
Cultural wellbeing	+ Increased income can support cultural activites - Shift from traditional to more modern economy can result in loss of culture	+ Improved access to cultural sites - Decreased availability of traditional resources	- Noise may impact use of culturally significant locations	- Avoidance of traditional activities and food consumption	- Change in local population makeup can contribute to decrease in cultural cohesion and traditional values	- Land use by industry may hinder access to culturally important sites or activities
Health Care Services	+ Improved overall health among employed people - Rising costs may make it harder to retain health workers	+ Improved access for emergency vehicles - Increased demand due to traffic collisions		- Increase in demand on local hospitals to treat effects of acute or chronic exposure	- Potential increase in demand on local hospitals to treat mobile workers	

3. What is HIA?

Health Impact Assessment (HIA) is a process that identifies how a specific project, policy or program could affect the health of people in local communities, and how those effects may be distributed within the population.

HIA is a structured planning and decision-making tool. It grew out of the field of environmental impact assessment (EIA), and applies methods and processes analogous to EIA to public health issues. It can be used to anticipate and prevent adverse impacts of programs, projects, and policies on public health, and to maximize the potential benefits.

HIA is particularly concerned with health effects that are unintended, and are not the main objective of the project, policy or program. The purpose of HIA is to provide evidence-based information that can be used in decision-making, with an ultimate goal of enhancing the health benefits of the policy, project or program and mitigating potential harms. HIA is not anti-development or pro-development: it simply evaluates each project in terms of potential health risks and benefits, and makes a set of recommendations targeted at minimizing any potential risks and maximizing the benefits.

Steps in the HIA Process

HIA follows a stepwise methodology that has been developed and standardized over several decades and that is documented in a number of guidebooks and toolkits. These steps, shown in the figure below, are analogous to those used by many other disciplines within environmental assessment.

Screening: Screening determines whether an HIA would be useful, and what level of effort might be required. The decision is based on factors such as whether the project/policy could affect health, whether the information generated through the HIA will be useful and timely, and whether there is an opportunity for the HIA to influence the decision-making process.

Scoping: Scoping identifies the health issues that will be examined in the assessment, and sets out the geographical and temporal boundaries and the assessment methodology that will be used. Scoping is usually done by the HIA practitioner in consultation with the local community, project proponent and other stakeholders.

Assessment: Assessment is the process of determining whether the project/policy is likely to affect health outcomes and of characterizing the effects. Assessment starts with establishing baseline or current community health conditions in the affected population; and then uses a combination of quantitative and qualitative approaches to clarify the connections between

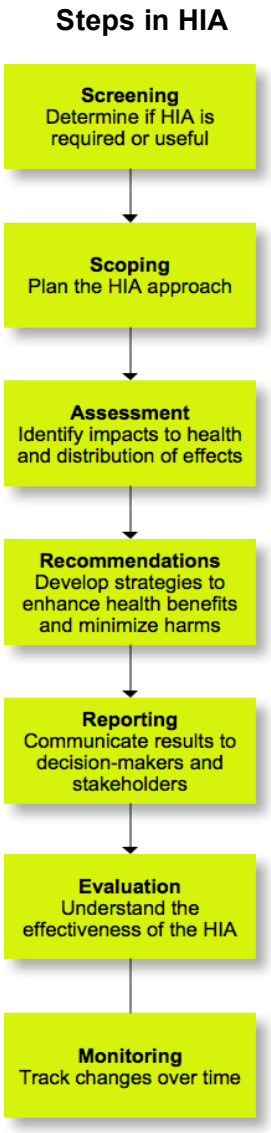
proposed activities and subsequent health outcomes. The predicted risk is often characterized by factors such as likelihood, magnitude, duration, frequency and distribution of impacts within the population.

Recommendations: Developing appropriate, evidence-based recommendations is at the heart of HIA. The purpose is to mitigate potential adverse health effects and to increase potential health co-benefits. The development of recommendations may also involve the development of an implementation plan that clearly defines responsibility and accountability for mitigation actions.

Reporting: Results of the HIA are communicated to a variety of stakeholders, such as the organization proposing the project or policy, local community groups, local health officials, NGOs, regulatory agencies or other interested external parties. This is often accomplished through a combination of written reports and in-person presentations.

Evaluation: Evaluation reviews the HIA process and outcomes and identifies whether the HIA was successful in achieving its goals. Was the HIA able to affect decision-making? Did it meet the needs of health stakeholders?

Monitoring: Monitoring refers to the tracking of relevant health indicators after the project/policy has been put into place, in order to understand how health changes over time. Monitoring continues long after the HIA is completed.



When is it useful to do an HIA?

While many projects may present theoretical health concerns, not all projects are likely to produce significant health effects. Imposing requirements for a complete or comprehensive HIA for every project is thus unnecessary and could lead to unreasonable expenses, studies and delays. In general, there are three major criteria that can help determine whether an HIA would be useful:

1. The potential for and intensity of potential public health effects: For natural resource development projects in Alaska, the following activities indicate that there could be the potential for a significant impact on public health that would be useful to examine through an HIA: the potential release of harmful contaminants; potential impacts to affected communities' subsistence resources, harvest or practices; a substantial influx of mobile (non-resident) workers; a significant impact on the local economy and employment rates; new staging, roads, or other access routes to or through previously isolated "bush" communities; noticeable

impacts from noise, road or air traffic, dust, or other changes in the immediate environment; or historic evidence that similar projects have affected human health.

2. The degree of public concern: Are there public perceptions, questions, and concerns about public health related to the proposed project that need to be factored into an agency's evaluation of the proposal and alternatives? If the public shows a great deal of concern, it may be prudent to undertake an HIA focused on the potential impacts of concern, even in cases where it appears likely that the analysis may not substantiate the concerns.

3. Whether there is any future benefit to the agency or other stakeholder: The project proponent or responsible public health agency may derive value from examining public health impacts that would help guide future planning and management of the project, help improve monitoring programs, and/or would contribute to a foundation for public health analysis and mitigation in subsequent plans.

How can an HIA be useful to different types of organizations?

There are many good reasons for undertaking an HIA. It is a process that benefits multiple parties simultaneously, including businesses, local communities and regulatory decision-makers.

Business

HIA represents good business practice and can lead to several beneficial outcomes. First, many regulators and intervenors are starting to demand that health issues be looked at comprehensively; HIA is a way to meet this expectation. Second, it can help address public concern. Community members are becoming increasingly aware that various components of a project can affect their health; integrating HIA into project planning can help reduce both real and perceived negative impacts on the community. Finally, HIA can help ensure that costly mistakes are avoided in advance of project implementation.

Local communities

The HIA process has a number of benefits for local communities. First, HIA can help to improve the overall health status of the population and reduce health inequities. Second, the HIA process may support inclusiveness, democracy, and community engagement in the decision-making process. This enables both decision-makers and citizens to become more informed and invested in promoting positive health outcomes and mitigating negative health impacts.

Regulators

HIA makes explicit the potential impacts of projects, programs and policies on health in way that is transparent and systematic. By quantifying or characterizing potential health impacts, an HIA can help regulators better understand the effects of projects, programs and policies on community health, which ultimately allows for decision-making that is informed by the best available evidence.

What form can an HIA take?

HIA is used in a broad variety of contexts, both integrated into environmental assessments, and as a stand-alone process. It can be done as a rapid, desktop exercise lasting a few weeks; or as a more comprehensive process that involves new data gathering and consultation with stakeholders, taking place over many months.

Chapter 5 of this guidance talks about HIA within the NEPA EIS process.

4. A Brief History of HIA in the US and Alaska

The Rise of HIA in the United States

Although it has been implemented in other countries and jurisdictions for decades, HIA has a relatively recent history in the United States. Its use, however, is on the rise. The first documented HIA in the United States was undertaken in 1999 in the context of a policy to increase the minimum wage for some workers in San Francisco (Research Council [US] Commission on Health Impact Assessment 2011). A count conducted by the Health Impact Project showed that in 2007, there were 27 completed HIAs in the United States; by early 2015, over 330 HIAs were documented as having been completed or in progress. These HIAs have been conducted across a broad range of sectors, including the built environment, transportation, national resources and energy, agriculture and food, and housing (Ross et al. 2014).

In the US, HIAs have largely been conducted by public health departments and educational institutions, with a smaller number conducted by private organizations and nonprofit or community groups (Ross et al., 2014). Several academic institutions have also been influential in advancing HIA education, methodology and capacity, including University of California, Los Angeles and the University of California, Berkley (National Research Council [US] Commission on Health Impact Assessment, 2011).

A few states have passed legislation that supports HIA, while other state health departments have voluntarily increased their engagement with HIA or developed guidelines that promote its use. At the federal level, HIA has often been implemented under the auspices of the National Environmental Policy Act (NEPA), which in theory requires federal agencies to assess the health effects of proposed federal actions [see following Section]. However, HIA has also been carried out to inform federal policy-making independently of NEPA, on policies such as the *Healthy Families Act* of 2008 and the *White House Task Force on Childhood Obesity* in 2010 (National Research Council [US] Commission on Health Impact Assessment 2011).

Internationally, some large corporations have incorporated standards for HIA in project planning, especially for resource development projects. For example, multinational oil companies such as Chevron and Shell have created internal corporate standards for HIA or for environmental, social and health impact assessment (ESHIA). Trade associations such as the International Petroleum Industry Environmental Conservation Association and the International Council on Mining and Metals have developed guides for HIA, and large lending institutions have also driven the use of HIA through their lending standards (National Research Council [US] Commission on Health Impact Assessment 2011). While most of the HIAs conducted in the United States have not been driven by these industry-related factors, these drivers may influence the uptake of HIA across the US in the future.

The North Slope Borough's HIA Program

In 2006 the North Slope Borough undertook an HIA to address impacts from proposed oil and gas leasing in the 4.6 million-acre Northeast National Petroleum Reserve-Alaska. This HIA was

integrated into an EIS that was led by the Bureau of Land Management (BLM) (US Department of the Interior Bureau of Land Management 2008). The role of the NSB in the EIS process was officially as a "Cooperating Agency" and the HIA was led by Dr. Aaron Wernham.

This HIA was the first ever to be included in a federal EIS in the United States. It was important: it resulted in improved relations between the BLM and the community, a decision to withhold parts of the area from leasing to protect the local wildlife and food supply, and new requirements for pollution monitoring. It also paved the way for future HIAs under NEPA both in Alaska and in other states (Wernham 2007).

The **North Slope Borough Health Impact Assessment Program** was developed in 2008, after receiving a grant from the State of Alaska. The Program began with two important projects: 1) a community baseline health analysis report to better understand the health issues facing North Slope communities, which would also be used to provide baseline data for HIAs, and 2) a program to educate North Slope communities about the EIA process and why HIAs should be included; to work with state and federal agencies about the importance of HIAs in land use and industrial proposals; and to begin a working group within the NSB to inform stakeholders about upcoming and current projects that HIA should be involved in with input from the group.

Since that time, the NSB has continued to be involved as a Cooperating Agency as part of federal EISs, often in partnership with external consultants (such as Habitat Health Impact Consulting). In addition, when certain proposals are considered for the North Slope and there are concerns from residents about impacts to human health, the NSB HIA Program submits health-related comments in cooperation with the Law Department, the Planning Department, and the Wildlife Department. To date, the NSB HIA program has provided comments on the ConocoPhillips exploration plan for the Devils Paw prospect, Shell's EP for both the Chukchi Sea and Beaufort Sea, and many others. The North Slope Borough DHSS collaborates with the Alaska HIA Program to help review HIA documents, coordinate field work and educate the public regarding HIAs being performed in their respective communities (Anderson et al. 2013). The NSB HIA Program has also partnered with the Alaska Native Tribal Health Consortium to expand its work in climate change, to capture a comprehensive view of the impacts to health on the North Slope.

History of HIA in Alaska

HIA also has a strong history at the state level in Alaska. In 2008, the Alaska Native Tribal Health Consortium (ANTHC), the State of Alaska Department of Health and Social Services (DHSS), and U.S. Centers for Disease Control and Prevention (CDC) jointly hosted a workshop on HIA in Anchorage, with attendance from ANTHC staff, state regulatory agencies, Alaska DHSS, University of Alaska health researchers, and federal health and regulatory agencies active in Alaska natural resource development. Conference attendees subsequently formed a working group, and developed the *Technical Guidance for Health Impact Assessment (HIA) in Alaska*, intended to provide guidance for practitioners on how to conduct HIA for large natural resource development projects in the state (State of Alaska 2011). In July 2010 the Alaska Department of Health and Social Services (DHSS) established an ongoing HIA program.

5. HIA and the Environmental Assessment Process in Alaska

Environmental impact assessment, or **EIA**, is a process used to predict the environmental consequences (positive or negative) of a plan, policy, program, or project prior to the decision to move forward with the proposed action. EIA can be undertaken by a government agency, a project proponent or developer, a community group, an NGO, or any other organization interested in identifying how a proposed project or policy might affect the environment.

Within Alaska, there are no state-specific requirements for EIA. Rather, EIA is conducted under the federal National Environmental Policy Act (NEPA). NEPA is a federal law that is intended "to assure that all branches of government give proper consideration to the environment prior to undertaking any major federal action that significantly affects the environment". It provides a set of administrative guidelines for how EIA is to be commissioned, conducted and reviewed. Under NEPA, environmental impact assessment is required for certain types of large development projects. Specifically, an impact assessment is required whenever a proposed activity or action:

- Is proposed on federal lands, or
- Requires passage across federal lands, or
- Will be funded in part or in whole by federal money, or
- Will affect the air or water quality that is regulated by federal law (US Environmental Protection Agency 2015a)

This applies to most oil and gas projects that take place in the vicinity of the NSB.

The NEPA Process

The NEPA process is lengthy, bureaucratic and complex; a summary is provided here to help readers understand the general parameters of the process. The basic process involves the following:

1. The project developer submits an **application** for a permit, triggering the NEPA process if the project is proposed on federal lands (or any of the other conditions listed above).

2. An **Environmental Assessment (EA)** is conducted. The EA is a concise document that provides information on whether the project is likely to result in no significant effect, or whether there may be significant effects, and an **Environmental Impact Statement (EIS)** should be prepared.

3. If an EIS is required:

    a. A **Notice of Intent** is prepared and made available to the public.

    b. **Scoping** is conducted (in conjunction with affected stakeholders) to identify the issues to be included in the EIS.

c. A **Draft Environmental Impact Statement (DEIS)** is prepared that describes the project's purpose and need; possible alternatives; a description of the affected environment (baseline conditions); and the environmental consequences of the proposed project.

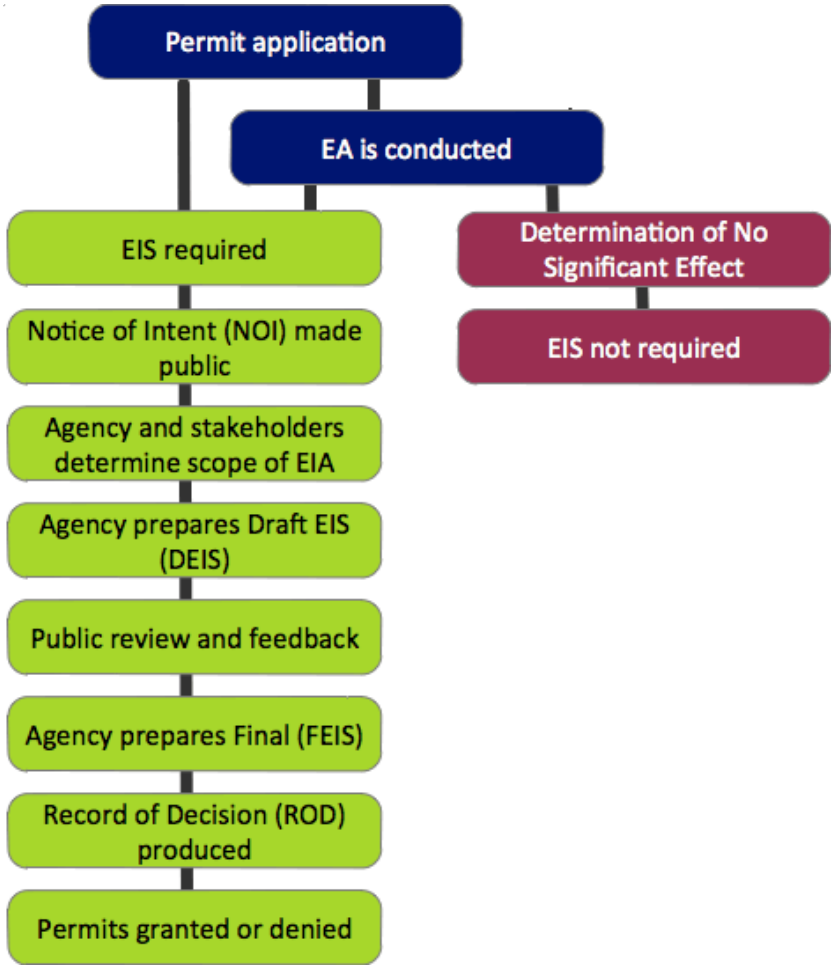
d. The DEIS is made public and comments are accepted.

e. A **Final EIS** is prepared that considers commentary and opinion from the public.

f. A **Record of Decision** is produced. The Record of Decision does not authorize a project to move forward and begin a project; rather, it provides an assessment of environmental impacts that government regulators use when deciding whether or not to grant their individual agency's permits.

4. **Permits** are granted (or denied).

The NEPA EA / EIS Process



Roles and Responsibilities

The NEPA EA/EIS process is coordinated by a **"lead agency"**: the federal agency with the greatest expertise, regulatory authority and capacity to manage the NEPA process for that particular project (University of Alaska Fairbanks 2011). In Alaska, the federal agencies that most often take the lead role in a NEPA process include:

- Environmental Protection Agency (EPA)
- Forest Service (USFS)
- Corps of Engineers (COE)
- National Parks Service
- Federal Highway Administration (FHWA)
- Department of Defense (DOD)
- Department of Energy (DOE)
- Bureau of Land Management (BLM)
- National Marine Fisheries Service (NMFS)

In some cases, federal agencies may act together with state, tribal or local agencies as joint lead agencies (US Environmental Protection Agency 2015b)

In addition, collaboration is sought from **cooperating agencies**: federal, state, tribal or local agencies that special expertise with respect to an environmental issue or jurisdiction relevant to the proposed project. The cooperating agency participates in the scoping process; develops information and prepares analyses, including portions of the EIS with which the cooperating agency has special expertise; and enhances the lead agency's interdisciplinary capacity (US Environmental Protection Agency 2015b). The NSB has acted as a cooperating agency on a number of EIS processes in Alaska.

During the EIS, **the public** provides input about what issues should be addressed during the scoping process and comments on the findings in an agency's NEPA documents. Opportunities for public participation include attending NEPA-related hearings or public meetings and submitting comments directly to the lead agency (US Environmental Protection Agency 2015b).

How is Health Considered in a NEPA EIS?

Despite the fact that the protection of human health is mentioned prominently in NEPA regulations, there has historically been little consideration of health in the EIS process. Where health has been considered, it has primary focused on toxic exposures.

However, the inclusion of a robust, systematic approach to public health is supported by NEPA, the regulations issued by the Council on Environmental Quality (CEQ), the agency in the Executive Office of the President charged with overseeing implementation of NEPA, Executive Orders 12898 and 13045, and available guidance on NEPA and environmental justice. As stated in "Public Health Analysis Under the National Environmental Policy Act", a white paper by Wernham and Bear:

> ***Health in NEPA***
>
> NEPA mentions health a total of six times. Among NEPA's fundamental purposes is: "promote efforts which will prevent or eliminate damage to the environment and biosphere

and stimulate the health and welfare of man." NEPA § 102 [42 USC § 4321] NEPA is intended, furthermore, to: "assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings." [42 USC § 4331]

And finally to: "attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences." [42 USC § 4331]

Health in the CEQ Regulations

Several general provisions of CEQ's NEPA regulations support the inclusion of health. First, agencies respond to substantive public concerns in the draft EIS [40 CFR § 1503.4]. When, therefore, an agency can anticipate substantive health concerns based on scoping, it is sensible to include these issues for analysis in the DEIS.

Second, in determining whether an effect may be significant (and therefore require analysis in the EIS) one of the factors that agencies should consider is "the degree to which the effects on the human environment are likely to be highly controversial" [40 CFR § 1508.27 (b) 4]. Commonly, health often figures among the strongest concerns expressed by affected communities.

The CEQ regulations also specifically define health as one of the effects that must be considered in an EIS or an EA. In defining "effects," the regulations state that: "Effects" includes ecological, aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative." [40 C.F.R. § 1508.8] And, the regulations instruct agencies to consider "the degree to which the proposed action affects public health or safety" in determining significance. [40 C.F.R. § 1508.27]

Health in Executive Orders

Executive Order 12898 instructs agencies to: "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States."

Similarly, Executive Order 13045 states that agencies must: "make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and ... shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks."

Statements relevant to NEPA-based health analysis in Federal Guidance

CEQ guidance on implementing Executive Order 12898 contains several suggestions relevant to public health analysis, including:

- Lead agencies should involve public health agencies and clinics
- Agencies should review relevant public health data (as for any other resource)

- Agencies should consider how interrelated cultural, social, occupational, historical, or economic factors may contribute to health effects of the proposed action and alternatives.

(Wernham and Bear 2010)

Who is responsible for reviewing health impacts in a NEPA EIS? What should a review include?

Under NEPA, the Lead Agency is responsible for ensuring that the potential health impacts of a project are adequately assessed in accordance with NEPA requirements. Currently, however, neither the CEQ nor the federal agencies that comply with NEPA have produced any guidance on the analysis of health effects in the NEPA process (National Research Council [US] Committee on Health Impact Assessment, 2011). To bridge this gap, the National Research Council (US) Committee on Health Impact Assessment has developed its own recommendations for agencies to conduct a robust, systematic analysis of health impacts in the NEPA process. This includes guidance for determining:

- When to conduct a systematic analysis of health effects in an EIS or EA;
- The appropriate scope of health problems to include in the analysis;
- What populations or communities are affected and describing baseline conditions in them;
- How to analyze health effects in a manner that is scientifically and legally defensible according to the requirements of NEPA; and
- Mitigation of identified effects on public health.

Further details are available in "Appendix F: Analysis of Health Effects under the National Environmental Policy Act" in the document *Improving Health in the United States: The Role of Health Impact Assessment (*National Research Council [US] Committee on Health Impact Assessment, 2011*).*

CEQ regulations also emphasize the importance of a collaborative, interdisciplinary approach to the NEPA process (National Research Council [US] Committee on Health Impact Assessment, 2011). Therefore, the review of the HIA is performed by the Lead Agency in collaboration with other Cooperating Agencies and parties to understand public comments and ensure they are addressed in the final EIS/ROD or EA/FONSI (Council on Environmental Quality 2007). This might be accomplished through an inter-agency working group to review comments, in-depth public comment workshops, and meetings with issue groups.

How does HIA fit in?

Although there are no requirements in NEPA for "HIA" by name, when applied in the context of an EA or EIS, the HIA process can help agencies fulfill the obligation to address public health concerns in a manner that is consistent with the legal requirements and spirit of NEPA.

In general, HIA can be undertaken in several different ways. First, it can be included as its own section within an EIS; in this case it may be titled "public health", "community health", or something similar. Second, HIAs can be presented as a stand-alone technical report in the

appendix, the conclusions of which are incorporated into the EIS, as is the practice of the State of Alaska HIA program. Lastly, HIAs can be undertaken independently of the NEPA EIS process by any stakeholder group that is interested in identifying the potential health effects of a project, policy or program proposal. Businesses, for example, may wish to use HIA to determine the potential health impacts of their development plans, or NGOs might want to use HIA for evidence-based policy advocacy. Public health agencies such as the NSB DHSS may also independently undertake an HIA in order to fulfill their responsibility to protect and promote public health in the populations they serve.

6. Commissioning an HIA

Health Impact Assessments are conducted in response to either regulatory or social demand. The types of organizations that commission or coordinate HIA are those that respond to this demand, and include government (federal, state, county and Tribal government agencies have all commissioned HIAs within the US), academia, non-governmental or community organizations and private-sector companies. These entities may request and pay for an HIA, may form a steering committee to provide oversight or may create Terms of Reference describing the requirements that the assessment must meet (Ross et al. 2014).

In many cases, both a steering committee and an HIA project team are established, with distinct roles.

The **steering committee** provides high-level oversight and direction to the HIA. It helps ensure that the HIA adequately represents diverse interests, responds to planning and decision requirements, and remains within the mandate and capacity of the organization funding it. The steering committee could include members of the funding organization(s); personnel from municipal or regional government; the local public health agency; the project proponent, community or special-interest groups; or affected residents (Ross et al. 2014).

The **HIA project team** is involved in the day-to-day conduct of the assessment. This team is in charge of gathering data, engaging stakeholders, undertaking analyses and writing up the results. The composition of the HIA project team is also important. The team should include at least one member with knowledge or experience of **how to conduct HIA**, since the function and structure of an HIA are considerably different than those of most other types of health research or reports. Including at least one team member with experience in **stakeholder engagement** is important, and the team also needs to have expertise in **health-related research** and the appropriate collection and analysis of health data, particularly around factors that shape health within North Slope Borough communities. Finally, the team needs to have or be able to access experts who may be able to provide additional specialist insight for some of the health topics that will be assessed (Ross et al. 2014).

In some cases, the project team can be assembled from within public health agencies or the regional tribal health agencies. In other cases, expertise is brought through the use of external consultants. This has frequently been the case in the North Slope Borough, where the DHSS has collaborated with Habitat Health Impact Consulting to produce HIAs.

Health Issues to be Included in the HIA

When commissioning an HIA, the lead or funding agency needs to describe what health issues the HIA should examine. One defining feature of HIA is that it is broad in scope, and addresses “the full range of potential impacts of the proposal on health determinants, health status, and health equity” (Bhatia et al. 2014). However, there is no single “best” way in which to frame or organize potential health effects. The framework selected can be tailored to match the context of

the proposal under consideration; as long as all of the important potential effects are addressed, the organization can be flexible. The table below shows several different frameworks that have been used to organize health issues for HIAs of major development projects. While each is different, all have included the major pathways through which the proposed project could affect community health.

Health Areas		
Alaska HIA toolkit (2011)	**Health Impact Assessment (HIA) for Natural Resource Development in Alaska: Collaborative Guidance (Draft)**	**HIA as part of the EIS for the National Petroleum Reserve, Alaska (2013)**
• Social Determinants of Health (SDH) including psychosocial, domestic violence and gender issues • Accidents and Injuries • Exposure to potentially hazardous materials • Food, Nutrition, and Subsistence Activity • Infectious Disease • Water and Sanitation • Non-communicable and Chronic Diseases • Health Services Infrastructure and Capacity	• Overall Health/Wellbeing • Psychosocial & Gender Issues • Accidents and Injuries • Contaminant Exposure • Food, Nutrition, and Physical Activity • Non-communicable/Chronic Diseases • Infectious Disease • Water and Sanitation • Health Services Infrastructure and Capacity • Occupational/ Community health interface • Maternal & Child Health	• Diet and Nutrition • Environmental Exposures • Infectious Disease • Safety • Acculturative Stress • Economic Impacts on Health • Health Care Services

7. How To Do HIA: Best Practice Resources

There are a number of good guidance documents that provide direction for how to conduct all the steps of HIA. For that reason, this type of information is not presented in this document. The sections below present several key aspects of HIA practice that should be considered in the context of major development projects in the NSB.

The table below presents a number of key resources and explains how each may contribute to high-quality HIA practice for the NSB.

Resource	How it is useful	Where to find it
Health Impact Assessment in the United States (2014). Ross C, Orenstein M and Botchwey, N. New York: Springer.	This textbook provides comprehensive guidance on undertaking all the steps of an HIA and places HIA in the context of US regulatory approaches, including NEPA. It also provides 20 case studies to illustrate good practice in each step of the HIA process.	Amazon.com or Springer.com
Technical Guidance for Health Impact Assessment (HIA) in Alaska (2011). State of Alaska HIA Program. Anchorage, AK: Alaska Department of Health and Social Services.	Detailed description of the HIA steps; provides Alaska-specific context and resources.	http://www.epi.alaska.gov/hia/AlaskaHIAToolkit.pdf
Good Practice Guidance on Health Impact Assessment (2010). International Council on Mining and Metals (ICMM). London, UK: ICMM.	This guidance document provides a good framework for conducting HIA for the extractive industry sector. The ICMM also presents a business case as to why mining companies should be interested in community health issues.	https://www.icmm.com/document/792

Resource	How it is useful	Where to find it
Health Effects Assessment Tool (HEAT): An Innovative Guide for HIA in Resource Development Projects (2010) Habitat Health Impact Consulting and ERM	This toolkit describes in detail the links between resource development projects and health, and describes what needs to be understood about the project and the local context in order to undertake an HIA.	http://www.apho.org.uk/resource/item.aspx?RID=83805
Improving Health in the United States: The Role of Health Impact Assessment (2011). National Research Council Committee on Health Impact Assessment. National Academies Press.	This comprehensive document from the National Academies of Science offers guidance to officials in the public and private sectors on conducting HIAs.	http://www.nap.edu/catalog/13229/improving-health-in-the-united-states-the-role-of-health
Minimum Elements and Practice Standards for Health Impact Assessment, Version 3. (2014) Bhatia R, Farhang L, Heller J, Lee M, Orenstein M, Richardson M and Wernham A.	Provides guidance on what must be included for a study to be considered an HIA, and describes best practice for HIA in terms of process and product.	http://hiasociety.org/wp-content/uploads/2013/11/HIA-Practice-Standards-September-2014.pdf
Guidance and Best Practices for Stakeholder Participation in HIA (2010) SOPHIA's Stakeholder Participation Working Group	Distills stakeholder participation techniques, case studies, and guiding principles from various fields of expertise, including HIA, environmental and social impact assessment, land use and transportation planning, community-based participatory research, and public health.	http://www.hiasociety.org/documents/guide-for-stakeholder-participation.pdf

Identifying Potentially Affected Communities in the NSB

An important part of an HIA is setting geographic boundaries for where effects will be considered. In identifying which NSB communities should be considered within any particular HIA, there are a number of criteria that can be used. The list below, reproduced from *the Technical Guidance for HIA in Alaska* (State of Alaska 2011) published by the Alaska Department of Health and Social

Services, describes a number of parameters that could be used as 'clues' in figuring out whether or not a community should be considered in the assessment, from a health perspective.

- Close geographic proximity to the project
- Potential changes to water sources and quantities
- Locations in projected release areas for contaminants of concern (e.g., plume)
- High likelihood for influx, resettlement, or relocation
- Intense work force recruitment potential
- High likelihood for change in key subsistence resources
- High likelihood for change in transportation infrastructure
- Potential for economic change including regional staging centers
- Existing large burden of diseases or health problems
- Existing high level of exposure to an environmental hazard

It should be remembered that different communities may be identified for different reasons; that different communities may be affected differently than one another; and that within any given community, different subsets of the population may experience different effects.

Obtaining Data on Current Health Conditions

An important part of the HIA process is putting together a profile of the current status of health in the affected population. It can sometimes be difficult to obtain relevant data at the level (village, region, state) at which it is needed.

To assist with data gathering, the list below describes several data sources that collate information on health in the North Slope Borough. Not all information will be relevant for every HIA.

McAninch, J. (2012) **Baseline Community Health Analysis Report.** Prepared for the and North Slope Borough, Department of Health and Social Services. This voluminous (366-page) report presents extensive detail on a wide range of health indicators for the NSB, with village-specific information for many indicators. Available at:

http://www.north-slope.org/assets/images/uploads/BaselineCommunityHealthAnalysisReport.pdf.

Habitat Health Impact Consulting. (2014) **Health Indicators in the North Slope Borough: Monitoring the Effects of Resource Development Projects**. Prepared for the and North Slope Borough, Department of Health and Social Services. This report identifies key health indicators in the context of resource development in the NSB and provides baseline data such that these indicators may be tracked over time. Available from the NSB DHSS HIA coordinator.

There are a number of **registries and surveillance systems** that collect information about specific diseases for all Alaskans and for specific sub-populations. Some of these can be queried online, others require access through the organization that runs the registry:

- The Alaska Cancer Registry
- The Alaska Native Diabetes Program Registry
- Alaska Birth Defects Registry
- Alaska Trauma Registry
- Alaska Native Tumor Registry
- Alaska Bureau of Vital Statistics
- Behavioral Risk Factor Surveillance System (BRFSS)
- Youth Risk Behavior Surveillance System (YRBSS)
- Alaska Native Epidemiology Center

Census Reports are also available on the NSB website. These reports are provided separately for Anaktuvuk Pass, Atqasuk, Barrow, Kaktovik, Nuiqsut, Point Hope, Point Lay and Wainwright.

8. Stakeholder Engagement in HIA

Stakeholder engagement is an essential component of HIA as it ensures that the HIA accurately represents concerns and experiences of affected population groups. Without any form of engagement, the HIA practitioner risks inaccurately identifying and characterising potential impacts and will lack the ability to propose meaningful and effective mitigation strategies for the affected community and other stakeholders (Tamburrini et al. 2011).

Who Are Stakeholders?

The word 'stakeholders' can mean different things to different people. In the context of an HIA, stakeholders are those individuals or organizations who stand to gain or lose from a decision or process. In the context of development projects in the NSB, stakeholders may include:

- Residents
- Community-based organizations
- Service providers
- Small businesses
- NSB elected officials
- Public agencies (including schools)
- Academic institutions

In addition, it should be recognized that industry project proponents are an important stakeholder in the HIA process. While industry may sometimes resist new regulatory efforts, it must also be recognized that many companies expend considerable effort and financial resources to try to be good neighbors and to act in a socially responsible manner. Because regulations will not typically address all of the potential health risks and benefits of a project, a collaborative relationship between industry and other stakeholders is likely to yield the most successful results.

Why Is Stakeholder Engagement Important?

Stakeholder engagement within HIA helps with the following objectives:

(1) to better understand the nature of health risks and benefits posed by the project;

(2) to ensure transparent and unbiased methods;

(3) to ground evidence obtained from other resources in the experiences of the local community; and

(4) to build trust between and within stakeholders and the public through effective HIA collaboration.

The input of stakeholders is a key element of HIA. Stakeholders are people and organizations that may be impacted by the proposed development.

Stakeholder input is used throughout the HIA process, from informing the selection of health issues to be included (scoping) through to providing input for the assessment of effects and development and implementation of recommendations.

Engaging with the public can also be used to build agency within communities that lack experience or confidence in participating in the decision-making process. Engagement done well can even help to empower community members with a sense of control over their lives, ultimately improving their sense of wellbeing.

Engagement activities can take on many forms depending on the size of the affected population groups, the number of stakeholders involved and the make-up of the consulting team conducting the EIS and HIA. Generally, with large EIS projects there is a distinct stakeholder engagement team that coordinates all communications with communities and stakeholders. It is important that HIA engagement activities link into pre-existing meetings to the greatest extent possible to prevent stakeholder burn-out. However, many traditional engagement activities (like open house meetings) serve little purpose for the HIA, as this type of meeting is primarily intended to provide information rather than receive input. Focus group meetings, one-on-one interviews, and workshops tend to be more effective methods of engagement for HIA.

However, the issue of 'stakeholder burn-out' is very real and should be noted. Heavy and long-lasting development in the North Slope Borough means that many agencies, tribal governments and community members have been engaged regularly for a long time about their viewpoints on impacts to proposed developments. This type of on-going engagement can be tiresome for people and can lead to low participation rates and frustration with the EIS process. Therefore as an HIA practitioner and stakeholder engagement lead, it is important to try to first identify existing records of engagement and then approach stakeholders and communities only to verify information and fill in gaps related specifically to the proposed development.

Example of Stakeholder Engagement in an HIA in the NSB

The table below shows some of the ways that stakeholder concerns shaped an HIA in the NSB. The HIA examined a new leasing plan for the National Petroleum Reserve – Alaska.

Stakeholder engagement in an HIA of North Slope Oil Exploration, 2007

Stakeholders involved	Forms of engagement	Summary of benefits of engagement in HIA
• Bureau of Land Management (BLM) • North Slope Borough (NSB) • Alaska Inter-Tribal Council • Public health · professionals • · Wildlife experts • NEPA analysts • The public	• Public meetings (i.e. hearings) • Review of transcribed public testimony from supplemental EIS • Key informant interviews • Involvement of NSB in every stage of HIA through in-person meetings; including scoping issues, editing reports and development of recommendations	• Elevation and consideration of Native population impacts • Improved collaboration between national regulating agency and Native government • Agreements reached and exploration moved forward • Precedent-setting incorporation of HIA into NEPA • Inception of ongoing collaboration

Table adapted from: Tamburrini et al. 2011

9. Reviewing a Completed HIA

The draft or completed HIA may be officially reviewed by a number of different agencies, and for different reasons. The HIA can be reviewed by the steering committee or the agency that has funded the HIA, in order to determine whether it is complete and of sufficiently high quality to finalize and publish. Or, it may be reviewed by a regulatory agency, or by its designate, to determine whether it is complete and likely to be accurate.

The task of reviewing the HIA can be complex. Some reviewers may feel they don't have sufficient expertise in health to be able to judge the accuracy of the claims. Other reviewers may understand health well, but may not be versed in the EIS process or in how major resource development projects are undertaken. Finally, the subject matter may be quite broad and beyond the expertise of any one individual. For this reason, it may be preferable for the reviewing agency to adopt a team approach that brings together the expertise of a diverse range of personnel.

The questions below are intended to help reviewers by providing prompts that will help determine if the HIA is likely to be complete and transparent in its reporting, and likely to be accurate in its conclusions.

Questions to Answer in the Review

Definition of Potentially Affected Communities

- Were the potentially affected communities chosen appropriately?

Stakeholder Engagement

- Has stakeholder engagement been conducted appropriately? There should be evidence to show that:
    - Stakeholder engagement was conducted;
    - The stakeholders were chosen to represent affected communities and a wide range of viewpoints and opinions, including those of vulnerable subgroups;
    - There was opportunity for meaningful engagement;
    - The engagement informed the selection of health issues examined

Community Heath Profile / Baseline Conditions

- Is the community health profile relevant? The information in the community profile should be specific to the proposed project and the community context in order to avoid presenting a large volume of irrelevant data. Data should describe both health outcomes (e.g. illnesses, overall health, etc.) and relevant health determinants (e.g., housing conditions, water and sewer supply, health care services).

- Have appropriate sources been used? For smaller communities, quantitative data on health conditions may not always be available or relevant; this can be improved by obtaining qualitative information from key informed sources in the health care sector or other organizations.

- Have potentially vulnerable populations been identified? Vulnerable populations are subsets of the population that may disproportionately bear adverse health effects because of predisposing conditions such as biological factors (e.g. age, pre-existing disabilities), social constructs (e.g. gender, ethnicity), material conditions (e.g. income or employment status) or exposure to adverse environments (e.g. populations located in specific geographic areas).

Assessment

- Does the assessment include the full range of health areas that may be affected? The reviewer must ascertain whether the HIA has adequately considered and evaluated the potential effects of the project on various health areas. The issues to be examined may be specified in the Terms of Reference for the HIA / EIS; however, the reviewer should identify if there are important gaps in terms of potential effects regardless of whether or not they are specified in a TOR.

- Are the methods and data sources appropriate? The HIA should draw on different information sources where appropriate. These may include:
    - Peer-reviewed literature
    - Published or grey literature reports from government or other organizations
    - Quantitative models
    - Academic subject area expert opinion
    - Key informant interviews
    - Stakeholder/resident opinion, gathered through focus groups, one-on-one interviews, community workshops, etc.

- Have both potential adverse and potential beneficial effects been identified?

- Has the assessment identified what parts of the population would be affected, and how there may be different effects for vulnerable groups?

- Have stakeholder concerns been addressed?

- Have cumulative effects been considered?

- Has the potential for accidents/malfunctions been addressed?

- Are any conclusions about the significance of the effect appropriate? It should be noted that “significance” in this context does not generally refer to statistical significance, but rather draws on attributes such as severity, likelihood and other parameters to characterize effects as “significant” or “not significant”.

Mitigation / Enhancement Measures

- Do management plans include both mitigations and enhancements? That is, in addition to describing measures to mitigate adverse effects, do the management plans also provide measures that will enhance potential health co-benefits of the proposed project?

- Do they seem appropriate?

- Are they specific and actionable?

10. After the HIA is Finished

Health impact assessment is an important tool for ensuring that health is considered as part of the planning and decision-making process for large projects in the NSB. However, HIA is only one tool in the toolkit, and one that fits best at a particular point: in the project development stage, and often as part of the regulatory permitting process.

However, across the lifecycle of a major development project, there are numerous opportunities to support good community health outcomes. This is true both in instances where an HIA has been completed, and also for situations in which an HIA was never done. These other opportunities should not be forgotten or ignored.

The bulleted list below describes examples of these additional opportunities. Most will require collaborative efforts among different organizations: project proponents, the NSB government, community groups, State or regional health and social service agencies and others.

- Ongoing monitoring to track whether health is changing in affected communities;
- Ongoing monitoring to confirm that mitigation measures put forward in the EIS are being adopted and/or enforced;
- Ongoing revision of emergency management strategies (for fires, explosions, spills, etc.) to ensure they remain up-to-date;
- Collaborative development of emergency health outbreak plans (e.g., pandemic influenza, Ebola) that coordinate efforts between industry and villages;
- Ongoing coordination between industry and the DHSS to discuss emerging health issues and observed trends, including the use of local health services by the mobile workforce;
- Ongoing monitoring and revision of approaches to traffic management in order to maximize safety;
- Collaboration between the NSB DHSS and project proponents and contractors to promote healthy camp environments;
- Ongoing discussion on how industry Corporate Social Responsibility efforts can be used to meaningfully support health.

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