Health Impact Assessment in Alaska

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Overview

• Background on HIA
• Steps of HIA
• HIA Program in Alaska
• Common data gaps and challenges
What is HIA?

- Preventive health report
- Informs decision makers
- Potential health effects
  - Projects
  - Policies
  - Programs
- Minimize adverse health effects
- Maximize health benefits
HIA Background—USA

- National Environmental Policy Act 1969 (NEPA)
- Federal agency requirement
- Assess environmental impacts
- Proposed development projects
- Environmental Impact Statements (EIS)
HIA Background—USA

- Economic Impact Assessment (EIA)
- Social Impact Assessment (SIA)
- Aspects of human health unaddressed
  - Health infrastructure (clinics, water)
  - Access to healthcare
  - Injury and disease patterns
  - Dietary change
- Urban development focus
HIA Background—Alaska

- 2004 HIAs (Grant funded)
  - NPR-A lease sale permit
  - Red Dog mine expansion
- Interest and concern
- Inevitability of future HIA requests
- State guidance document needed
HIA Background—Alaska

- 2008—1st HIA workshop
- Created interagency working group
- Produced HIA toolkit
- Felt need for coordinated leadership
- HIA program founded in DHSS
- Began HIA work in July, 2010
## Steps in HIA

<table>
<thead>
<tr>
<th>Element</th>
<th>Key Actions</th>
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<tbody>
<tr>
<td><strong>Screening</strong></td>
<td>Is HIA needed? (Desktop/Rapid Appraisal/Comprehensive)</td>
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<tr>
<td><strong>Scoping</strong></td>
<td>Key health concerns:</td>
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<td>• Community</td>
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<td>• Data review</td>
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<td>• Similar projects</td>
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<td><strong>Baseline Data Gathering</strong></td>
<td>Field studies</td>
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<td>Review existing data sources</td>
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<td>Traditional knowledge</td>
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<td><strong>Risk Assessment</strong></td>
<td>Risk identification (Health Areas)</td>
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<td>Risk ranking</td>
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<td><strong>Action Plan</strong></td>
<td>Mitigation Approach</td>
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<tr>
<td><strong>Monitoring &amp; Evaluation</strong></td>
<td>Key Performance Indicators (KPI)</td>
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</table>
Screening

• Is an HIA needed?
• What type of HIA is needed?
  – Desktop
  – Rapid appraisal
  – Comprehensive
• Project characteristics
• Environmental, social, and community concerns
Screening cont.

- Desktop HIA
  - Few anticipated health effects
  - 2-4 weeks
- Rapid Appraisal HIA
  - Uses existing health data, no new field work
- Comprehensive HIA
  - Need to collect new field study data
  - Large, complex projects
Health Effect Categories (HECs)

Accidents and Injuries
Chronic Diseases
Food, Nutrition, Subsistence
Hazardous Substances
Health Care Delivery
Infectious Diseases
Social Determinants of Health
Water and Sanitation
Scoping

- Develop appropriate work plan
- Establishes boundaries for the HIA
- Identify potential health impacts related to project
- Identify potentially impacted communities (PACs)
- Identify key partners and stakeholders
Baseline Data Gathering

- Literature review
- Review of available data from federal, state, local and tribal databases
- Identify any data gaps
- Collection of new health data, if necessary
- Continual collaboration with partners and stakeholders
Stakeholder Engagement

- Obtain public input on health risks and benefits from all interested parties
- Work within stakeholder engagement process with lead federal agency
  - Scoping meetings
  - Review submitted comments
  - Discussion with health personnel
Risk Assessment

• Potential health impacts are rated and ranked
  – Significance, nature, timing/duration, extent, magnitude, frequency
  – High, medium, low, no impact
Action Plan

• Identify mitigation strategies
  – Minimize risks, maximize benefits
• Prioritize mitigation recommendations
  – Cover trucks transporting crushed rock for new road
  – Install air monitoring equipment
  – Closed camps
Monitoring & Evaluation

• Need a method to demonstrate effectiveness of the HIA
• Monitoring and evaluation (M&E) plan
• Key performance indicators selected
  – Ideally health outcomes clearly linked to project
  – Use of existing health databases
• Timeline for review of KPIs and reporting results
Alaska HIA Program
Please Note

- HIA is **not legally required** in AK
- **Not enforced**
  - Seen as best practice
- HIA is **outside the fence**
  - Worker & community interface
Who does the HIA?

**Federal Lead Agency**

- EPA
- MMS
- BLM
- USACE
- Others

**Federal Cooperating Agencies**
- EPA
- MMS
- BLM
- USACE
- Others

**State Cooperating Agencies**
- DNR (LEAD)
- DHSS*
- DEC
- ADF&G
- DOT
- Others

**Local Cooperating Entities**
- Municipalities
- Tribal Governments
- Boroughs
- Cities
- Counties
- Others

**Proponents**
- Corporations
- State Government
- Cities
- Boroughs
- Others

**Contractors**
- Environmental
- Socioeconomic
- Human health
- NEPA specific
- Others
ADHSS HIA Program Strengths

- Transparency
- Existing partnerships
- Access to health data
- Systematic approach
- Diverse project involvement
- Longevity
- Development of Toolkit
# Toolkit Highlights

## Section Titles | Highlights
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Section 1: General Background | Overview of HIA and HIA process
Section 2: Screening—how to decide whether to conduct an HIA? | Project features that affect human health
Section 3: Types of HIAs | Desktop, Rapid Appraisal, Comprehensive
Section 4: Health Effects Categories | Health effects table—Health areas routinely reviewed in HIA
Section 5: Scoping | Process for prioritizing health issues

Table 4: Project design features and examples of health effects
## Toolkit Highlights

<table>
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<th>Section</th>
<th>Highlights</th>
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<td>Restrictions with human health data</td>
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<td>Nutritional surveys</td>
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<td>Process for collection</td>
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<tr>
<td>Section 7: Stakeholder Engagement</td>
<td>Cultural considerations in Alaska</td>
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<td>Importance of coordination</td>
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<tr>
<td>Section 8: Impact Assessment</td>
<td>How to rate and rank risks</td>
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<td>Section 9: Mitigation</td>
<td>Required, Negotiated, Voluntary</td>
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<tr>
<td>Section 10: Monitoring &amp; Evaluation</td>
<td>Key Performance Indicators (KPI)</td>
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<td></td>
<td>Structural, process, outcomes</td>
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<tr>
<td>Section 11: Resources</td>
<td>Financial and Informational Sources</td>
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</tbody>
</table>
**Project Timeline and HIA**

**Phase 1: Baseline**
- Screening
- Scoping meetings
- Site visits
- Existing data gathered
- New data collected
- Literature review
- Summary Report

**Phase 2: NEPA/EIS**
- Data synthesis
- Data Analysis
- Updated site visits
- Risk Assessment
- Health Action Plan
- Standalone HIA

**Phase 3: Operation**
- Ongoing monitoring
- Evaluate Action Plan
Systematic Project Review

Project Features

- Location
- Size
- Design
- Resource material
- Schedule
- Workforce
Informed Health Review

**Project Features**
- Location
- Size
- Design
- Resource material
- Schedule
- Workforce

**Health Effect Category**
- Social Determinants of Health
- Accidents and Injuries
- Hazardous Substances
- Food, Nutrition, Subsistence
- Infectious Diseases
- Chronic Diseases
- Water and Sanitation
- Health Care Delivery
# Social Determinants of Health

<table>
<thead>
<tr>
<th>OUTCOMES</th>
<th>DETERMINANTS</th>
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<tbody>
<tr>
<td>Life expectancy</td>
<td>Economic Indicators</td>
</tr>
<tr>
<td>Initiation of prenatal care</td>
<td>Mean household income</td>
</tr>
<tr>
<td>Infant mortality rates</td>
<td>Employment</td>
</tr>
<tr>
<td>% Low birth weight</td>
<td>% below poverty line</td>
</tr>
<tr>
<td>Substance use in pregnancy</td>
<td>Educational Status</td>
</tr>
<tr>
<td>Confirmed child abuse</td>
<td>Highest level of Attainment</td>
</tr>
<tr>
<td>Confirmed domestic violence</td>
<td>Family Structure</td>
</tr>
<tr>
<td>Oral health</td>
<td>Divorce Rate</td>
</tr>
<tr>
<td>Teen birth rates</td>
<td>Single parent households</td>
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<tr>
<td>Suicide</td>
<td></td>
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<tr>
<td>Substance Abuse</td>
<td></td>
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</tbody>
</table>
## Accidents and Injuries

### OUTCOMES

<table>
<thead>
<tr>
<th>Unintentional Injuries</th>
<th>Intentional injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatal</td>
<td>Fatal (Homicide/Suicide)</td>
</tr>
<tr>
<td>Non-fatal</td>
<td>Non-fatal (Homicide/Suicide)</td>
</tr>
</tbody>
</table>

### DETERMINANTS

- Law enforcement
- VPSO
- State Trooper
- Alcohol use
- Protective Equipment
- Helmets
- Life jackets
- Prevention programs
HIA Project Examples

- Chuitna
- Donlin
- Alaska Pipeline Project
Common Data Gaps

• Quantified food consumption information
• Human exposure data
• Current and comprehensive baseline health data
Common Data Gaps

- Quantified food consumption information
Food Consumption Information

- Projects can impact access, quality, quantity and competition
- Harvest surveys do not usually address consumption
- Nutritional surveys are expensive and time consuming
Food Consumption Information

• We need to know:
  – How much subsistence food is being eaten
  – Most frequently eaten foods
  – If and why any changes have occurred
  – What foods are eaten to replace subsistence foods

• Collaborative effort also needed
HIA Program Example

Alaska Pipeline Project

- Gas treatment facility
- Natural gas pipeline
- Over 800 miles
- Could affect > 70 communities
- Lack of consumption data
HIA Program Solution

• Initiated a collaboration with ADF&G
• Added nutritional questions to existing ADF&G harvest surveys
• Enabled more communities to be surveyed
• Required fewer resources and decreased survey fatigue
• Ongoing collaboration
Common Data Gaps

- Human exposure data: Methyl mercury
Mercury Exposure Data

- Limited data in many communities
- Mercury levels can be determined from analysis of hair samples
- Mining can release mercury into environment
- Methyl mercury can bioaccumulate in animals, such as fish
- Mercury already a concern in many areas
HIA Program Example

Donlin Gold Mine

- Open pit mine
- Near Crooked Creek
- Significant transportation infrastructure
- Natural gas pipeline
- Strong mercury concern locally
HIA Program Example

- Needed to obtain baseline information
- Limited data on methyl-mercury levels for residents of the YK region
HIA Program Solution

- Collected hair samples in potentially affected communities
- Obtained baseline mercury levels
- Continued strategy when mercury exposure is a concern for HIA
Common Data Gaps

• Current and comprehensive baseline health data
Baseline Health Data

• Lots of databases, not always current
• Information is commonly at borough level
• Ideally, information includes potentially affected communities to provide most relevant picture
HIA Program Example

Chuitna Coal Mine

- Surface coal mining
- Located near Tyonek and Beluga
- Information was at borough-level
HIA Program Solution

• Designed field study to provide updated baseline data
• BRFSS-style questionnaire
• Integrated other HIA Program strategies
  • Food consumption questions
  • Hair sample collection for mercury exposure information
• Obtained updated picture of baseline health
HIA in Alaska

• HIA is an evolving field
• Alaska HIA: model for resource development projects in country
• Program developed strategies to address common data gaps specific to Alaska
• Continual collaboration important for success
Questions?

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www.epi.alaska.gov/hia
Active Projects

- Chuitna Coal Mine
- Donlin Gold Mine
- Susitna-Watana Hydroelectric Project
Methodology

• Eight communities
• Convenience sample
• 186 hair samples
• May-September 2012
• Alaska Public Health Laboratory performed direct mercury analysis
<table>
<thead>
<tr>
<th>Sample Population (number)</th>
<th>Median Hg (range)</th>
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<tbody>
<tr>
<td>WCBA (79)</td>
<td>0.38 ppm (0.03–2.63 ppm)</td>
</tr>
<tr>
<td>Women &gt; 45 years (66)</td>
<td>0.58 ppm (0.05–3.71 ppm)</td>
</tr>
<tr>
<td>Men (41)</td>
<td>0.77 ppm (0.13–3.64 ppm)</td>
</tr>
<tr>
<td>Overall (186)</td>
<td>0.51 ppm (0.03–3.71 ppm)</td>
</tr>
</tbody>
</table>
Median Mercury Levels

- 0.38 ppm < 0.42 ppm (statewide median)
- All results < 5 ppm (follow-up level)
- Weakly associated with age
- No gender difference