

2 HIA Methods

Methods for the HIA were based upon guidelines provided by the Pew Health Impact Project²⁵, as well as those found in the Merseyside Guidelines for HIA²⁶. There are seven steps for this HIA, including scoping, screening, assessment, recommendations, implementation, reporting, and evaluation.

2.1 Screening

This HIA is was performed in response to a citizen petition to the Garfield County BOCC requesting a health an environment study be conducted to evaluate potential health impacts of Antero's natural gas project in Battlement Mesa. Garfield County has several years of experience with natural gas development and production and with community concerns over air and water degradation and the potential health impact. The county has responded by initiating ongoing ambient air monitoring and had previously commissioned the 2008 Community Health Risk Analysis of Oil and Gas Industry Impacts in Garfield County, Colorado (referred to as the Saccomanno Study)²³. Based upon the results of the air monitoring and the recommendations of the Saccomanno Study, GCPH determined that an HIA could be used to provide decision makers (the BOCC) with valuable information that could allow them to respond to citizen concerns and help them in making informed decisions.

2.2 Scoping

The Scope of the HIA was defined in part by the requests outlined in the BCC petition (Attachment 1). The CSPH team determined that assembly and analysis of baseline health, environmental, and social data were possible within the framework of a HIA. In order to further elucidate specific stakeholder concerns, the CSPH team conducted a series of stakeholder meetings with citizens, the industry state regulatory agency, the state health department, and Antero representatives (Tables 1 and 2). As a result of this stakeholder process, a Scope of Work was written that was informed by citizen concerns in order to provide a framework for the HIA. This work ultimately led to a focus on eight areas of health concern (stressors) specific to natural gas development and production: air emissions, water and soil contaminants, truck traffic, noise/light/vibration, health infrastructure, accidents and malfunctions, community wellness, and economics/employment.

2.3 Assessment

The assessment of the stressors began with a demographic characterization of the population of Battlement Mesa and a baseline health characterization of the community by compiling information from a variety of sources. A Battlement Mesa Baseline Health Profile is included in

Appendix C. This information was used to describe the general population, as well as identify potentially high risk sub-populations. A health literature review, previously conducted by members of the CSPH team, was used to identify potential health risks and vulnerable subpopulations associated with natural gas development and production²⁷⁻²⁸. A human health risk assessment was conducted using longitudinal air and water quality data (Appendix D). All this information was used to develop assessments of air quality, water and soil quality, traffic, noise, community wellness, economics/employment, health infrastructure, and accidents/malfunctions.

Each assessment of the stressors includes a review of its general impact on physical, mental and/or social health as described in relevant medical and social science literature; a compilation and analysis of existing environmental and health data describing current conditions in Battlement Mesa; the means by which Antero's plans for drilling could alter the stressor; and finally a characterization of the stressor's impact on health. Several physical health outcomes linked to potential exposures are considered, including respiratory, cardiovascular, cancer, psychiatric, and injury/motor vehicle-related impacts on vulnerable and general populations in the community. The Battlement Mesa Baseline Health Profile (Appendix C) provides supporting documentation of baseline physical and social health determinants. In addition, the Human Health Risk Assessment (Appendix D) provides a comprehensive review of available air quality and water and soil contamination data and a systematic assessment of related health risk.

Of note, as of the date of this report, Antero had not submitted a Major Land Use Impact Review to Garfield County nor had they submitted a Comprehensive Drilling Plan to the COGCC. As such, based on consultation with GCPH, this HIA has been conducted based upon information provided by Antero to the public in community meetings and provided to the CSPH, by request, from Antero. If the ultimate Major Land Use Impact Review/Comprehensive Drilling Plan presented by Antero differs from the information available to the CSPH team, then it is possible that there will be other risks/benefits not identified in this report.

2.4 Recommendations

At the end of each assessment we have summarized what is known and not known about the impact of the Antero plans on the stressor. We then have provided several recommendations aimed at decreasing negative impacts or improving positive ones. In general, recommendations focus on continued monitoring of air and water sheds and strict enforcement of existing regulations; use of best available current technology and rapid adoption of new technologies to decrease emissions; traffic and noise mitigation; economic benefits used locally to mitigate negative local effects; and planning for the impacts of increased population, as well as for the loss of economic activity when development ends in five years should help decrease social impacts.

2.5 Reporting

This document represents the Draft HIA and Recommendations. This Draft HIA will be delivered to the Garfield County BOCC, and will be presented at a BOCC meeting. The GCPH will post this report on their Battlement Mesa HIA website for public review. There will be a 30-day public comment period, after which stakeholder review and input will be considered in the preparation of the final HIA. There will be a presentation to the community after the report is finalized. External review was provided by Habitat Health Impact Consulting and Dr. Teresa Coons, co-author of the Saccomanno Study. CDPHE provided review of the sections describing Physical Health Determinants and the Human Health Risk Assessment.

2.6 Implementation

Implementation of any recommendations in this report is the responsibility of the BOCC. The CSPH team will assist the BOCC with dissemination and education of the community regarding the findings of the report as needed by conducting community meetings.

2.7 Evaluation

In order to determine the value of this HIA and HIA process to the Garfield County BOCC and stakeholder groups, the CSPH will monitor Antero's project permitting process at both the county and state level. Our evaluation of HIA effectiveness will be, in part, determined by whether potential health impacts and mitigation strategies were considered when the permitting process occurs. In addition, CSPH will seek specific comments from GCPH and Garfield County BOCC on their assessment of the HIA and HIA process. Furthermore, the CSPH will present the HIA and descriptions of the HIA process at several scientific, professional, and community meetings in 2010-2011. Finally, an evaluation report will be delivered to the BOCC by December 31, 2010.