

Reviewer's report

Title:Air concentrations of volatile compounds near oil and gas production: A community-based exploratory study

Version:1**Date:**3 September 2014

Reviewer:Sandra Steingraber

Reviewer's report:

- Minor Essential Revisions

1) PLEASE PROVIDE CLARIFICATION, IF POSSIBLE, ON DISTANCES BETWEEN SOURCE OF EMISSIONS (WELL HEAD OR OTHER INFRASTRUCTURE) AND SITE WHERE AIR COLLECTION TOOK PLACE. ALSO PLEASE CLARIFY THE RANGE OF SETBACKS REQUIRED BY DIFFERENT STATES.

IN EACH CASE, WERE THE DISCOVERED VIOLATIONS (BENZENE, FORMALDEHYDE, ETC.) BEYOND THE MINIMUM SETBACK DISTANCE REQUIRED BY THAT STATE?

2) IN THE SUPPLEMENTARY PDF FILE: NOT SURE WHAT IS MEANT BY "METHANE SMELL." CAN THIS BE CLARIFIED? METHANE, ALL BY ITSELF, IS ODORLESS. AND MERCAPTAN WOULD NOT BE ADDED UNTIL GAS IS IN A DISTRIBUTION PIPELINE, TO MY KNOWLEDGE.

- Discretionary Revisions

IN EITHER THE INTRODUCTION OR THE DISCUSSION, I WOULD LIKE TO SEE MORE INFORMATION ABOUT THE ABILITY OF WIND WEATHER TO IMPACT AIR CONCENTRATIONS. SEE ESPECIALLY THE WORK OF DAVID BROWN ET AL AT THE SOUTHWEST PENNSYLVANIA ENVIRONMENTAL HEALTH PROJECT, WHICH SHOWS MUCH HIGHER EXPOSURES TO PARTICULATE MATTER DURING WINDLESS, CLOUDY NIGHTS THAN DURING OTHER TIMES AND WEATHER CONDITIONS.

<http://www.environmentalhealthproject.org/wp-content/uploads/2014/04/reveh-2014-0002-Brow>

IN EITHER THE INTRODUCTION OR THE DISCUSSION, I WOULD LIKE TO SEE MORE INFORMATION ABOUT VARIABILITY OF GASEOUS EMISSIONS FROM DRILLING AND FRACKING OPERATIONS, BOTH WITHIN AND BETWEEN GEOLOGICAL FORMATIONS. E.G. H₂S IS A BIGGER PROBLEM IN TEXAS THAN IN THE MARCELLUS SHALE. WHAT OTHER DIFFERENCES EXIST? AND WHAT ABOUT DIFFERENCES BETWEEN WELLS IN A SINGLE FORMATION? GEOGRAPHIC UNPREDICTABILITY OF GASEOUS POCKETS OF VOCs IMPLIES THAT REGULATIONS, NO MATTER HOW STRICT, MAY NOT EVER BE SUFFICIENT TO MITIGATE THE PROBLEM. DO THE AUTHORS AGREE? CAN AUTHORS PROVIDE A DISCUSSION?

HERE ALSO IS A COMPENDIUM OF FINDINGS ON THE HEALTH RISKS OF FRACKING—WHICH INCLUDES A LONG SECTION ON AIR POLLUTION—WHICH WAS PUT TOGETHER RECENTLY BY CONCERNED HEALTH PROFESSIONALS OF NEW YORK. I AM NOT SUGGESTING THE COMPENDIUM RECEIVE CITATION, BUT THERE MAY BE ADDITIONAL CITATIONS IN THE FOOTNOTES THAT ARE USEFUL AND RELEVANT TO THE OTHERS. THIS IS OFFERED ENTIRELY WITHOUT OBLIGATION:
<http://concernedhealthny.org/wp-content/uploads/2014/07/CHPNY-Fracking-Compendium.pdf>

Level of interest:An article of outstanding merit and interest in its field

Quality of written English:Acceptable

Statistical review:No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests