

Dear Drs. Fisher, Yonkos and Staver,

I was pleased to read the Hughes Center's new report on the environmental impacts of roxarsone use. My colleagues and I who read the report were impressed with the scope and thoroughness of your review. We felt obliged, however, to highlight a few significant comments we believe should be addressed to improve the report's effectiveness for informing the state legislature regarding the environmental concerns related to arsenical drug use by Maryland's poultry industry.

Issues related to scientific synthesis and communication

1. The report covers a broad array of scientific literature on the use of roxarsone in poultry feed and the subsequent transport of arsenic into the environment. Despite this, the lack of a clear, concise conclusion section summarizing the opinions of the study authors regarding the questions posed to the Hughes Center by the Environmental Matters and the Education, Health and Environmental Affairs Committees of the Maryland General Assembly may make the report less effective in its ability to clearly influence policy and legislative decisions. In its current form, the four-page abstract section is the closest approximation of an executive summary or conclusion section, which would serve the purpose of synthesizing the overall findings of the reviewers for the legislative audience. If a separate conclusion section is not added to the report, it may be helpful to include 1-2 sentence bolded "partial conclusions" following each subsection of the abstract to maximize the value of the report for members of the General Assembly.
2. The review covers a large amount of literature on the gradual accumulation of inorganic arsenic in the soil profile as a result of roxarsone use. Despite the fact that the expanded review of literature indicates that there is general agreement that the use of roxarsone is unsustainable in the long term because it does lead to an accumulation of inorganic arsenic, the reviewers fall short of any discussion or conclusion sections clarifying the overarching finding that the use of roxarsone will lead to unsafe accumulations of inorganic arsenic in the soil profile in time.

Relevance of content to Maryland

3. The review repeatedly refers in the responses to questions three and six to the soil arsenic remediation standards of both Delaware (11mg/kg) and Maryland (3.6 mg/kg). This may be confusing or distracting to Maryland legislators, as their multiple analyses using these different numbers lead them to different conclusions as to the amount of time it would take for the land application of arsenic-laden poultry waste to accumulate to levels of concern in soil. As the study was commissioned for the State of Maryland, it would be more appropriate to remove or strongly deprioritize analyses using Delaware State standards and focus on the Maryland soil criteria.

Coverage of public health impacts

4. The report covers on pages 6-8 the human health impacts of arsenic and the increasing recognition and understanding of the health relevance of very low-level exposures to inorganic arsenic. Although the review acknowledges that it is not within the scope of the report to review these issues in depth, it does not suggest that this issue warrants further discussion or review in regard to making policy level decisions regarding the use of

roxarsone. This may lead members of the legislature to conclude that the review of the public health issues related to the use of roxarsone is sufficiently addressed in the report. It is prudent to make this qualification more clearly and explicitly in the report to ensure that readers understand that additional health considerations are not covered within the report itself.

Updating and version specification

5. We have noted that there are multiple versions of the report in circulation, though these different versions are not easily distinguishable. The initial version of the document sent by Dr. Fisher contains an important error in the response to question 2, which if taken at face value, would likely lead readers to conclude that very little arsenic in poultry waste is present in the inorganic form. A revised version of the document that corrects this error is currently available on the Hughes Center Website. It is important to specify on the front page of the document that revisions have been made (and the date on which those revisions were published).

We commend you on your willingness to support the Maryland legislature by producing a report that we are hopeful will be used to advocate for the health of the citizenship of Maryland. We hope you consider our comments in making a decision to revise and redistribute your report to the legislature. To this end, we would be happy to be of assistance if our expertise would be helpful to you, and we look forward to opportunities to converse on public health and environmental agricultural issues in the future.

Sincerely,



Keeve Nachman, Ph.D., M.H.S.
Assistant Scientist
Departments of Environmental Health Sciences and Health Policy and Management
Bloomberg School of Public Health
Program Director, Farming for the Future
The Johns Hopkins Center for a Livable Future