

# **Confined Feeding Operations (CFO) Project Team Workshop Part 1 Proceedings**



Prepared by the  
CASA Secretariat  
for the  
CFO Project Team

March 2012

## **WORKSHOP DESCRIPTION:**

The purpose of reconvening the CFO Project Team is to fulfill Recommendation 10 from the 2008 report. Recommendation 10 asks the Team to reconvene in 2011 to conduct three tasks:

- a) review the implementation status and outcomes of recommendations made in this report,
- b) assess the success of these activities, and
- c) make any further recommendations, if needed, to reduce air emissions from CFOs in Alberta related to this strategic plan.

This work is to be divided into two parts with today's Workshop (March 15<sup>th</sup> 2012) constituting Part 1 and a follow-up Workshop (date to be determined) constituting Part 2. The ultimate goal of reconvening the Team is to present to the CASA Board the Team's findings around Recommendation 10 and to advise the Board as to the future of the CFO Project Team.

The focus of today's Workshop was to complete part a) of Recommendation 10 and begin discussions around part b); the follow-up Workshop, Part 2, will focus on feedback on Part b) and c) of Recommendation 10. The CFO-IRT had already begun the task of completing part a). They reviewed each recommendation and reported on the progress made. At this Workshop, participants heard presentations on Recommendations 1-9 (excepting Recommendation 4 which is waiting for the completion of Recommendation 3 to begin work) and had the chance to ask clarifying questions. Participants then turned to part b) of Recommendation 10 and discussed the achievements that have been made so far as well as areas where more work may be required. Lastly, participants discussed the procedure for the follow-up Workshop Part 2.

## **CHRONOLOGY OF THE CFO PROJECT TEAM:**

In March 2008, the CFO Project Team brought forward its final report to the CASA Board entitled "Managing Air Emissions from Confined Feeding Operations in Alberta". The report contained ten recommendations (see Appendix A), nine of which constituted the substantive work to be done while the tenth asked the Team to reconvene to review its work.

In September 2010, a Statement of Opportunity came to CASA asking that a team be formed to check on the progress of the implementation of the 2008 recommendations in advance of reconvening the full Team. Subsequently, the CFO Implementation Review Team (CFO-IRT) was formed and in March 2011 the CFO-IRT submitted its final report to the CASA Board. The team found that, although implementation was not complete, the implementation of the 2008 recommendations was on track to reconvene the full CFO Project Team in November 2011.

In November 2011 a small working group met to check the progress of the completion dates for the 2008 recommendations and decided that enough recommendations would be complete to reconvene the full CFO Project Team in early 2012.

## **CHANGES TO TEAM MEMBERSHIP:**

It is important to note that four years have passed since the CFO Project Team was put into abeyance. Since that time, many people from the original Team have moved on and are no longer available to participate. New representatives were asked to attend in their place and, as such, there are many participants who are both new to the CFO Project Team and to the CASA consensus process.

## **PRESENTATIONS:**

Participants heard a presentation on each of the nine recommendations, except for Recommendation 4. The implementation of Recommendation 4 cannot begin until Recommendation 3 has been completed. As such, no presentation was given on this Recommendation but a written update was provided. Participants were provided with a written status update on each of the recommendations to supplement the information from the presentations. Where final reports were available, these were provided in hard copy at the Workshop as well as electronically. These tools were meant to help participants understand the work that has been done to date and to communicate this information to their stakeholders.

### Recommendation 1: Development of a New Emissions Inventory

The CFO project team recommends that:

The Government of Alberta, led by Alberta Agriculture and Rural Development, with support from Alberta Environment and advice from a multi-stakeholder group formed for this purpose, compile an inventory for CFO air emissions in Alberta based on the US EPA National Air Emissions Monitoring Study, with the inventory to be completed by March 31, 2011.

#### *Presentation Highlights:*

- Alberta Agriculture and Rural Development (ARD) developed an inventory to estimate emissions of ammonia (NH<sub>3</sub>) and particulate matter (PM) from CFOs called the Ammonia and Particulate Matter Emissions Inventory for CFOs in Alberta (APMEICA).
- APMEICA estimates the emissions of NH<sub>3</sub> and PM (PM<sub>2.5</sub> and PM<sub>10</sub>) from beef cattle, dairy cattle, poultry, swine and sheep CFOs, including sub-categories of the various livestock within each main livestock category.
- APMEICA estimates the emissions of NH<sub>3</sub> and PM (PM<sub>2.5</sub> and PM<sub>10</sub>) from the various types of CFOs by multiplying their respective emission factors (EFs) by their respective activity factors (AFs).

#### *Summarized Group Discussion:*

- Emission Factors are available for different eco-regions, but cannot be broken down beyond a county level.
- It was noted that graphs in the presentation showed that emissions are forecast to increase by 2021. This however may be offset by a drop off in farming in general. It may also be adjusted as new Growth Factors become available and the model is updated. The model used Growth Factors from 2007 as those were the most recent available.

- Mobile monitoring units were used to determine Growth Factors while research from elsewhere was used to come up with Emission Factors.
- A study to determine new Emission Factors was recently completed in the United States. The raw data is out but is still being analysed and should be ready by the summer of 2012. The study will produce new Emission Factors that will be incorporated into the model.
- Something to consider in the future may be looking at ways to conserve ammonia and use it to supplement fertilizer requirements.
- A next step might be to connect this Recommendation with Recommendation 3.
- In 2007, Environment Canada did some studies and used Growth Factors to predict future emissions. This is the only data available related to chemical information and Growth Factors.

#### Recommendation 2: Source Apportionment

The CFO project team recommends that:

Alberta Environment, with support from Alberta Agriculture and Rural Development and the intensive livestock industry, conduct specific studies in areas with CFOs, using suitable source apportionment methods to estimate the contribution of CFO emissions of the five priority substances relative to other sources of these emissions. These studies are to be completed by December 31, 2010.

#### *Presentation Highlights:*

- To date a contractor has been selected to conduct a CFO source apportionment literature review and to develop a work plan. This report is expected to be available mid-May 2012.
- Alberta Environment and Water and Alberta Agriculture and Rural Development staff are working together with the selected contractor on this project.

#### *Summarized Group Discussion:*

- The work plan being created will help to determine cost and feasibility which is important to know.
- IF the source apportionment studies go ahead, they will help to identify key markers which can help to differentiate CFO emissions from other industrial sources. It may be possible to look at how other industries conduct source apportionment but this would add another layer of complexity to the work to be completed.
- There has been some delay in getting this Recommendation underway due to funding constraints. Funding has been made available to undertake this initial step to scope the project. A key learning from this Recommendation is to truly understand the full scope and implications of an action before recommending it.
- This literature review is looking at jurisdictions in the US and Europe.
- This work is precedent setting because it looks at all five priority substances.
- The USEPA has not done source apportionment.

### Recommendation 3: Monitoring for Ammonia, H<sub>2</sub>S, PM and VOCs

The CFO project team recommends that:

Alberta Agriculture and Rural Development:

- a) develop, with input from all stakeholders, an ambient monitoring plan for ammonia, H<sub>2</sub>S, PM and VOCs to determine current ambient levels around CFOs. The plan will include timelines, budget, methodology (with reference to the Air Monitoring Directive), and responsibilities;
- b) undertake ambient air monitoring of ammonia, H<sub>2</sub>S, PM and VOCs around CFOs, based on the above plan, beginning in 2008; and
- c) submit a status report by March 31, 2009, with a final report on results to be submitted by March 31, 2010 to CFO project team stakeholders and the Alberta Ambient Air Quality Objectives Stakeholder Advisory Committee.

#### *Presentation Highlights:*

- This study, conducted over a 14-month period, measured ambient air concentrations of five air quality parameters-of-interest at the category one minimum distance separation (MDS), along the path of the prevailing bi-directional wind, both upwind and downwind of a beef cattle, a dairy cattle, a poultry and a swine CFO in Alberta.
- The five parameters-of-interest were: ammonia (NH<sub>3</sub>), hydrogen sulphide (H<sub>2</sub>S), particulate matter (PM<sub>2.5</sub>), total suspended particulates (TSP) and volatile organic compounds (VOCs).
- The study also compared the ambient air concentrations to the proposed Alberta Ambient Air Quality Objectives (AAQOs).

#### *Summarized Group Discussion:*

- Although P-cresol is a VOC, it was not included in the objectives of this study.
- Because of confidentiality it is not possible to disclose certain information, such as the number of beef cattle on a farm; however, to be included in the study, sites had to meet certain specific requirements. To share any specific information would require consent from the producer.
  - It was noted that without knowing the size of the operation, it is difficult to put results in perspective. Perhaps it could be possible to express the measurement as a unit based on Emission Factors and Activity Factors without specifically referencing a site. In this way the data would be easier to understand and wouldn't violate confidentiality.
- Perhaps these mobile units could be applied to work around Recommendation 8.
  - The mobile monitoring stations used in this work have been dispatched to another research project within Agriculture. It is better for them to be in use than to sit idle.
- The study did consider QA/QC protocols (Quality Assurance/Quality Control) which was examined by data management specialists. This information, however, cannot be shared due to confidentiality.
- This study used the MDS (Minimum Distance Separation) laid out in AOPA that have traditionally been used. Other jurisdictions may use other MDSs.
- The study recorded measurements during all four seasons. It was noted that this was very challenging logistically.

#### Recommendation 6: Paper Study on Potential Management Mechanisms

The CFO project team recommends that:

Alberta Agriculture and Rural Development lead a paper study on the following five management mechanisms, to assess their potential to favourably affect emissions, ambient air quality, nutrient recovery, and other potential benefits, and report back to CFO project team stakeholders by March 31, 2009, at which time consideration will be given as to where the research might be applied.

- Biocovers
- Bottom loading
- Shelterbelts
- Composting
- Dust palliatives

#### *Presentation Highlights:*

- This study reviewed the information pertaining to the five outlined best management practices (permeable covers for manure storage facilities, bottom loading of liquid manure storage facilities, manure and dead animal composting and dust palliatives for beef cattle feedlots and unpaved roads) in mitigating the effects of the six emissions-of-concern namely ammonia (NH<sub>3</sub>), hydrogen sulphide (H<sub>2</sub>S), particulate matter (PM), odour, volatile organic compounds (VOCs) and bioaerosols (including pathogens).
- This study also reviewed the social considerations of select beneficial management practices as well as the potential costs and benefits of select beneficial management practices.
- This study proposed recommendations to address key knowledge gaps in relation to the five best management practices.

#### *Summarized Group Discussion:*

- AARD's mobile monitoring stations could potentially be applied to this Recommendation. They could be used to take measurement with no BMPs (Best Management Practices), then apply the BMPs, then measure any changes.
- Simplicity was the key to the discussion of BMPs- it was important that BMPs be easy to implement and cost-effective.
- Research studies were gathered from across the globe and then thoroughly reviewed – looking at the information they contained and checking references. The final report underwent intense review.
- The study found that stockpiling had fewer odour emissions than composting because composting required turning of the material.
- Emission loss was measured, but it should be noted that odour is difficult to measure.

#### Recommendation 5: Management Mechanisms Research Plan

The CFO project team recommends that:

Alberta Agriculture and Rural Development and the CFO industry develop a plan to submit to the Government of Alberta and research agencies for funding to do a study to quantify the reductions in priority emissions and odour, and any other benefits, from frequent manure removal, manure application, and moisture management.

*Presentation Highlights:*

- ARD and the CFO industry developed a plan to study the three best management practices (BMPs) – frequent manure removal, manure application and moisture management.
- Next steps suggest that information on these BMPs is lacking and further scientific and technical review is required. ARD plans to review the results of this Recommendation in conjunction with the outcomes from Recommendation 1, 3 and 6 and other completed recommendations and share and discuss this information with the CFO industry in order to use all the gathered information to develop a research plan in collaboration with CFO industry and knowledge experts.

*Summarized Group Discussion:*

- Recommendation 5 plans to move things forward in a deliberate, strategic way using all the information from Recommendations 1, 3, and 6 and put together a suite of options.
  - It's important to consider things together to avoid negative consequences/effects that are not evident when issues are considered in isolation.
  - It's important to work together and pool resources. For example, the Dairy Farmers of Canada are working on a greenhouse gas emission program.
- Under 'economic consideration', this Recommendation tried to capture the benefits of nutrient retention at the site.
- There were originally 40 BMPs (Best Management Practices), and this list was narrowed down.
- There is some crossover between the work that AARD does and climate change/greenhouse gases. There is not a lot of activity specifically directed at climate change/greenhouse gases but much of the meteorological/drought work that AARD does would fit into these boxes.
- The varied climate of Alberta wasn't directly considered, but would probably fall under 'economic' and 'social considerations'.

Recommendation 7: Odour Management Plan Template

The CFO project team recommends that:

The CFO industry develop an odour management plan template for use by operators in the intensive livestock industry. The plan will be based on economic feasibility, scientific evidence of odour reductions, and new technology, specifically best available technology economically achievable (BATEA), and will be ready for use by January 2009.

*Presentation Highlights:*

- The development of the Odour Management Template was a collaboration between the Intensive Livestock Working Group (ILWG), Alberta Agriculture and Rural Development (ARD) and the Natural Resources Conservation Board (NRCB).
- The Odour Management Template is complete and will be used by livestock organizations and ARD as an extension/education tool to improve the awareness of various techniques and tool CFOs can use to better manage odour and foster good neighbour relations.

*Summarized Group Discussion:*

- The distribution of this tool will be through the AARD extension group.
- This Recommendation considered other jurisdictions including Texas, Minnesota, Nebraska, and Iowa.
- This tool is a positive step and it is important to increase awareness of its availability.
  - The Champions need to be the commodity organizations.
  - There needs to be separation between the regulator (NRCB) and extension, but they can work collaboratively to use this tool in that process to help problem organizations improve their practices and neighbour relations.
  - This tool will be provided to Field Guides during the training session that AARD provides to them. They are given a suite of materials to help them with their work.
  - The challenge is to percolate this information to the producer level.
  - Potentially this tool could be incorporated into the Approvals package.
  - This tool can help to improve neighbour relations.
- There are no monetary incentives for farmers to implement these practices. Rather, there is a focus on making these changes because they are practical, low-cost, improving neighbour relations and make sense over the long-term.

Recommendation 8: Managing Odour in Problem Areas

The CFO project team recommends that:

The CFO industry work with operators in problem areas to develop a site specific odour management plan. The Government of Alberta will provide resources (expertise, skills, knowledge) to assist with plan development and implementation. Problem areas will be identified using information from the NRCB and the industry. In working with operators, the industry and government may want to consider measuring odour around CFOs.

*Presentation Highlights:*

- The team implementing this project consisted of representatives from the Intensive Livestock Working Group (ILWG), Alberta Agriculture and Rural Development (ARD) and the Natural Resource Conservation Board (NRCB).
- The project worked to:
  - Determine the number of total odour complaints in the province using the NRCB database.
  - Identify, where possible, the reasons for the odour complaints.
  - Identify areas in the province where odour is a significant issue.
  - Identify management options that may address odour in problem areas.

*Summarized Group Discussion:*

- This study was not based on the species or size of the operation but rather the number of complaints received.



- There are uncontrollable factors like weather and timing related to crops that may result in odour related events.
- NRCB statistics show a spike in complaints in 2011. This could be related to heavy flooding and weather conditions last year.
  - Statistics from NRCB show that the number of total complaints received regarding odour have decreased over the last ten years.
- Odour monitoring is quite costly compared to air quality monitoring.

#### Recommendation 9: Improving Communications

The CFO project team recommends that:

The NRCB and Alberta Agriculture and Rural Development work with all involved parties to develop a plan by March 31, 2009 to improve communications and relationships among stakeholders regarding information related to CFOs. The following are areas where attention should be focused to improve communications and stakeholder relationships:

- Alternative dispute resolution processes,
- Communications between agencies and Government of Alberta departments, and
- Communications between the NRCB and complainants.

#### *Presentation Highlights:*

- The Communication Plan was drafted and approved in 2009 and implementation of the plan is complete and will continue to be updated. The Plan was a joint partnership between ARD and NRCB.
- The intent of the work completed by ARD and NRCB was to increase stakeholder awareness of: tools and resources currently available, the roles and responsibilities of various Government of Alberta agencies and departments and NRCB compliance and enforcement policy and process.

#### *Summarized Group Discussion:*

- The Communication Plan was completed in March 2009 and all the implementation strategies have been completed but will be updated on an ongoing basis
- NRCB has a toll free phone service which gives 24-hour access to trained operators.

#### **ASSESSING THE SUCCESS OF THE RECOMMENDATIONS:**

Part b) of Recommendation 10 asks the Team to “assess the success of these activities” referring to the implementation of status and outcomes of the recommendations. The Team began considering this item by answering two questions:

1. What successes have been achieved?
2. Is there any that remains to be addressed? Any unfinished business?

The Team worked to create two lists, corresponding to the two questions, to act as a catalyst for discussion around part b) of Recommendation 10. These lists are additional tools to help participants

understand the work that has been done to date and to communicate this information to their stakeholders.

### Summarized Group Discussion of the Two Questions:

*What successes have been achieved?:*

- Recommendation 1: Development of an emissions inventory
  - This inventory can continue to be updated. It provides a benchmark and tool for assessing emissions. It also goes beyond fluctuations in animal numbers.
- Recommendation 3: Monitoring for ammonia, H<sub>2</sub>S, PM and VOCs
  - This air quality monitoring project has increased our knowledge base and our understanding of the complexity of the issue.
- Recommendation 7: Odour management plan template
  - This has increased understanding of odour sources and how to practically manage the odour from these sources.
- Recommendation 8: Managing odour in problem areas
  - This has led to increased understanding on the nature of problem operations in Alberta and what action has been taken to manage problem operations. It has also demonstrated that problem operations are not clustered geographically.
- Recommendation 9: Improving communication
  - The development of communications tools has been valuable to help improve neighbour relations.
- The CFO Project Team has provided the opportunity for collaboration among diverse groups and helped to improve relations, understanding and awareness among stakeholders. It has acted as a valuable forum for discussion and helped to encourage discussion about the relevant issues.
- The CFO Project Team has achieved a great deal - a number of projects have been completed and a large amount of information has been generated. A great deal of work has been done to identify gaps. It has helped to create ownership of the issues and forward momentum.
- In general, in Alberta, great strides have been made around CFOs since the 1990s and there is ongoing commitment to work on this issue.

*Is there any that remains to be addressed? Any unfinished business?:*

- Recommendation 2: Source Apportionment
  - The literature review and work plan need to be completed and next steps need to be considered and prioritized. This could be an opportunity to seek input from the CFO Project Team.
- Recommendation 3: Monitoring for ammonia, H<sub>2</sub>S, PM and VOCs
  - The existing information on Recommendation 3 needs to be refined in order to work towards addressing Recommendation 4 (Recommendation 3 is a prerequisite to Recommendation 4).
  - It would be helpful to have more specific data from Statistics Canada.

- There is no correlation between results and the size of the operation due to confidentiality.
  - A next step could be to relate this Recommendation to the emissions inventory (Recommendation 1).
- Recommendation 4: The 24-hour AQO for ammonia
  - This Recommendation needs to be completed.
- Recommendation 5: Management mechanisms research plan
  - This work needs to be finalized and the next steps determined with regards to plans to move things forward in a deliberate, strategic way using all the information from Recommendations 1, 3, and 6.
- Recommendation 7: Odour management plan template
  - Time will be needed to determine if the Odour Management Template is effective.
  - There may also be more required to link odour and management practices.
  - Follow-up work could include further efforts to increase awareness and adoption of the template.
- Recommendation 8: Managing odour in problem areas
  - Continued effort is required to find ways to manage problem operations.
- Work is required to ensure the use/adoption of the tools developed by the recommendations. For example:
  - Best management practices (Recommendation 5, 6)
  - Odour management template (Recommendation 7)
  - Problem operations (Recommendation 8)
- There are still gaps in information. Some of the gaps have been pointed out by the final reports resulting from the implementation of the recommendations. Other gaps may include:
  - Human health effects
  - Dust and particulate matter
  - Relating results to Cumulative Effects Management.
- There are legislative issues that remain unaddressed. For example, relating to the management of problem operations.
- There may be a need to include other stakeholders in CFO related discussions, particularly airsheds.
- Moving forward it is important to consider economic/resource feasibility in order to achieve the most value for expense. It is also important to prioritize issues so that the most pressing rise to the top.

## **WORKSHOP PART 1 WRAP-UP AND NEXT STEPS:**

The purpose of reconvening the CFO Project Team is to fulfill Recommendation 10 from the 2008 report. This work is to be divided into two parts with today's Workshop (March 15<sup>th</sup> 2012) constituting Part 1 and a follow-up Workshop (date to be determined) constituting Part 2. The ultimate goal of reconvening the Team is to present to the CASA Board the Team's findings around Recommendation 10 and to advise the Board as to the future of the CFO Project Team.

Given the discussion at today's Workshop and what needs to happen at the Workshop Part 2, the Team discussed what needs to be accomplished in before Workshop Part 2 in order to have a productive discussion at Workshop Part 2.

### ***Action: The Team will consult with their stakeholders in preparation for the Workshop Part 2.***

Participants outlined the need to consult with stakeholders by:

- Sharing the information that was presented at today's Workshop.
- Sharing the lists of successes and items that remain to be addressed. In sharing the lists, stakeholders should consider the following questions:
  - Is there anything missing from the lists?
  - Do any of these issues "rise to the top"?
  - Are any of these issues priorities (to work on in a collaborative process)?
- Preparing feedback from their stakeholders/constituents to share with the CFO Team during the Workshop Part 2.

The CASA Secretariat is available to provide support and advice to help Team members communicate and consult with their stakeholders. Team members also have various tools available to help them with this task, including:

- Electronic copies of the presentations
- Written status reports on each of the recommendations
- 2008 CFO Project Team final report
- 2011 CFO-IRT final report
- Recommendation specific supporting documents:
  - Recommendation 1: *Ammonia and Particulate Matter Emissions Inventory for Confined Feeding Operations in Alberta*
  - Recommendation 3: *Ambient Air Quality Measurement Around Confined Feeding Operations in Alberta*
  - Recommendation 6: *A Review of Beneficial Management Practices for Managing Undesirable Air Emissions from Confined Feeding Operations*
  - Recommendation 7: *Odour Management Plan for Alberta Livestock Producers*
  - Recommendation 9: Folder – *Agricultural Operations Practices Act: Where neighbours fit into the process*

By sharing the information from the Workshop Part 1 presentations and the two lists with stakeholders, Team members will be able to attend the Workshop Part 2 and discuss part c) of Recommendation 10 which explores if there if any more appropriate work for the CFO Project Team. During the Workshop Part 1, the Team discussed that this discussion has two dimensions:

1. How do we address any unfinished business that has been identified?
2. Is there any new work that could be appropriately addressed using a consensus process?

Team members should also be able to participate in a discussion around what advice should be brought to the CASA Board as to the future of the CFO Project Team.

- *Workshop Adjourned* -

**APPENDIX A: Recommendations from CFO Project Team 2008 final Report – *Managing Air Emissions from Confined Feeding Operations in Alberta.***

Recommendation 1: Development of a New Emissions Inventory

The CFO project team recommends that:

The Government of Alberta, led by Alberta Agriculture and Rural Development, with support from Alberta Environment and advice from a multi-stakeholder group formed for this purpose, compile an inventory for CFO air emissions in Alberta based on the US EPA National Air Emissions Monitoring Study, with the inventory to be completed by March 31, 2011.

Recommendation 2: Source Apportionment

The CFO project team recommends that:

Alberta Environment, with support from Alberta Agriculture and Rural Development and the intensive livestock industry, conduct specific studies in areas with CFOs, using suitable source apportionment methods to estimate the contribution of CFO emissions of the five priority substances relative to other sources of these emissions. These studies are to be completed by December 31, 2010.

Recommendation 3: Monitoring for Ammonia, H<sub>2</sub>S, PM and VOCs

The CFO project team recommends that:

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- a) develop, with input from all stakeholders, an ambient monitoring plan for ammonia, H<sub>2</sub>S, PM and VOCs to determine current ambient levels around CFOs. The plan will include timelines, budget, methodology (with reference to the Air Monitoring Directive), and responsibilities;
- b) undertake ambient air monitoring of ammonia, H<sub>2</sub>S, PM and VOCs around CFOs, based on the above plan, beginning in 2008; and
- c) submit a status report by March 31, 2009, with a final report on results to be submitted by March 31, 2010 to CFO project team stakeholders and the Alberta Ambient Air Quality Objectives Stakeholder Advisory Committee.

Recommendation 4: The 24-hour AQO for Ammonia:

The CFO project team recommends that:

The Alberta Ambient Air Quality Objective Stakeholder Advisory Committee defer its decision on a 24-hour ambient objective for ammonia until April 2009, at which time the AAAQOSAC will determine if they have sufficient information from the ambient air monitoring study on which to base a decision.

Recommendation 5: Management Mechanisms Research Plan

The CFO project team recommends that:

Alberta Agriculture and Rural Development and the CFO industry develop a plan to submit to the Government of Alberta and research agencies for funding to do a study to quantify the reductions in priority emissions and odour, and any other benefits, from frequent manure removal, manure application, and moisture management.

#### Recommendation 6: Paper Study on Potential Management Mechanisms

The CFO project team recommends that:

Alberta Agriculture and Rural Development lead a paper study on the following five management mechanisms, to assess their potential to favourably affect emissions, ambient air quality, nutrient recovery, and other potential benefits, and report back to CFO project team stakeholders by March 31, 2009, at which time consideration will be given as to where the research might be applied.

- Biocovers
- Bottom loading
- Shelterbelts
- Composting
- Dust palliatives

#### Recommendation 7: Odour Management Plan Template

The CFO project team recommends that:

The CFO industry develop an odour management plan template for use by operators in the intensive livestock industry. The plan will be based on economic feasibility, scientific evidence of odour reductions, and new technology, specifically best available technology economically achievable (BATEA), and will be ready for use by January 2009.

#### Recommendation 8: Managing Odour in Problem Areas

The CFO project team recommends that:

The CFO industry work with operators in problem areas to develop a site specific odour management plan. The Government of Alberta will provide resources (expertise, skills, knowledge) to assist with plan development and implementation. Problem areas will be identified using information from the NRCB and the industry. In working with operators, the industry and government may want to consider measuring odour around CFOs.

#### Recommendation 9: Improving Communications

The CFO project team recommends that:

The NRCB and Alberta Agriculture and Rural Development work with all involved parties to develop a plan by March 31, 2009 to improve communications and relationships among stakeholders regarding information related to CFOs. The following are areas where attention should be focused to improve communications and stakeholder relationships:

- Alternative dispute resolution processes,<sup>1</sup>
- Communications between agencies and Government of Alberta departments, and
- Communications between the NRCB and complainants.

#### Recommendation 10: Evaluating the Strategic Plan

The CFO project team recommends that:

The CASA secretariat reconvene the CFO team in January 2011 to:

- a) review the implementation status and outcomes of recommendations made in this report,
- b) assess the success of these activities, and
- c) make any further recommendations, if needed, to reduce air emissions from CFOs in Alberta related to this strategic plan.