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**MITIGATING AIR EMISSIONS FROM
ANIMAL FEEDING OPERATIONS
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Methane Emissions from Dairy Cattle

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Species: Dairy

Use Area: Animal Housing

Technology Category: Diet Modification

Air Mitigated Pollutants: Methane

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System Summary:

There are a large number of options that can potentially be used to mitigate methane emissions from dairy cattle. The basic result of using these approaches is an improvement in the efficiency of nutrient use in the animal and increased productivity. Methane emissions per unit of milk produced will decrease as a result of these changes. An important component is continuing to improve forage quality. Higher quality forages have higher digestibility in the cow and less methane emissions than lower quality forages. A second approach is to better balance the diet protein and carbohydrate fractions to improve the efficiency of both rumen fermentation and feed nutrient use. Methane emissions will be reduced as a result. There are also opportunities to provide specific feed additives to decrease methane emissions from the cow. Their use is currently limited due to lack of data to demonstrate their efficacy in lactating dairy cows. Ionophores are one feed additive that does have data indicating improved feed efficiency and decreased methane emissions.

Applicability and Mitigating Mechanism:

Potential mitigation options include:

- Improved forage quality
- Rations balanced to improve efficiency of rumen fermentation
- Use of ionophores in rations

Limitations:

- Many options will require some financial investment
- Management changes may be needed
- Requires a systems approach
- Feed additives that could be helpful in reducing methane emissions have not been tested in animal trials
- Cost to benefit ratio cannot be defined for many practices that could be use

Cost:

The cost of practices that could be implemented on a dairy farm to reduce methane emissions will be highly farm specific. Each farm will need to evaluate the available mitigation options to determine the best choices for their situation. The costs for implementation will also vary between farms due to differences in their current cost structures. The initial benefits to the farm will be improved efficiency of animal production, efficiency of nutrient use and improved profitability.