

Part 309 – National Air Quality Site Assessment Tool

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309.0 Purpose

To provide guidance to NRCS State Conservationists, Directors of the Pacific Islands and Caribbean Areas, national center directors, and National Headquarters leadership officials regarding the implementation and use of the National Air Quality Site Assessment Tool (NAQSAT) for assisting in resource concern identification and conservation planning efforts for confinement-based livestock and poultry operations.

309.1 Background

A. NAQSAT was developed for livestock producers, their advisors, and conservation planners to identify opportunities for addressing air emissions from confinement-based livestock and poultry operations. It provides assistance to livestock and poultry producers at confined animal operations in determining the areas in their operations where there are opportunities to make changes that result in reduced air emissions. Use of NAQSAT is applicable for the following animal species:

- (1) Swine
- (2) Dairy
- (3) Beef
- (4) Horses
- (5) Broiler chickens
- (6) Laying hens
- (7) Turkeys

B. Air emissions research from livestock production systems is increasing every year. NAQSAT is based on the most accurate, credible data currently available regarding mitigation strategies for emissions of ammonia, methane, volatile organic compounds, hydrogen sulfide, particulate matter, odor, and nitrous oxide from livestock and poultry confined animal operations. NAQSAT development included funding from two NRCS conservation innovation grants.

C. NAQSAT considers the influence of the following on air emissions:

- (1) Diet and feed management
- (2) Animal housing
- (3) Manure collection, transfer, and storage
- (4) Land application
- (5) Mortality management
- (6) Public perception
- (7) Onfarm roads

D. NAQSAT can be accessed free of charge at <http://naqsat.tamu.edu>. The tool is used online and will not download onto the user's computer. Each NAQSAT session is assigned its own unique URL, which may be bookmarked and saved by the user. All NAQSAT sessions are saved on the host computer and may be accessed by the user over the next 30 days for updates and additional comparisons. NRCS is requesting an increase to this 30-day time period. Planners will be notified when the request is granted. NAQSAT does not require personally identifiable information that could be used to identify a particular livestock or poultry operation. As such, all information entered in the tool is confidential and cannot be traced back to the user.

309.2 Implementation Timeframe

By the end of calendar year 2015, the use of NAQSAT will be required for evaluating air quality resource concerns for all new NRCS assistance requests at confinement-based livestock and poultry operations with a maximum capacity greater than or equal to 300 animal units for the following species: swine, dairy, beef, horse, broiler chickens, layer hens, and turkeys. Use of NAQSAT for smaller operations (i.e., less than 300 animal units) of these species is encouraged, but not required.

309.3 Guidance for Tool Usage

A. When providing conservation technical assistance to a livestock or poultry producer at a confined animal operation with a maximum capacity greater than or equal to 300 animal units, and when such a livestock or poultry producer has requested Environmental Quality Incentive Program financial or technical assistance, NAQSAT will be used as part of the process to determine potential air quality resource concerns at the livestock or poultry operation. A baseline NAQSAT report (i.e., representing the current management of the operation) will be provided to NRCS by the producer or a technical service provider (TSP), or prepared by the conservation planner. The conservation planner will then use the information identified by the baseline NAQSAT report, in conjunction with other pertinent data for the livestock or poultry operation, to identify any potential air quality resource concerns at the operation. If an air quality resource concern is identified for the operation, the conservation planner, producer, or a TSP will identify potential mitigation options to address that concern and prepare an updated NAQSAT report representing the management of the operation after implementing the potential mitigation options. This process may be iterative until a mitigation alternative is identified that addresses the air quality resource concerns and does not create or worsen an additional resource concern.

B. The official NAQSAT User's Manual can be accessed at <http://naqsat.tamu.edu/docs/user-manual.pdf> and should be used to prepare the NAQSAT reports. In general, the user will select the appropriate species at the livestock or poultry operation (**Note:** If multiple species are present at the operation, a NAQSAT report will be prepared for each species). The user will then answer the specific questions, as applicable, under each of the data categories (e.g., animals and housing, feed and water, etc.).

C. Upon completion of the online tool, the user will click on the "Get Results" button at the bottom of the page to prepare and view the report. This report shows a series of bars that provide a nonquantitative score for each category and air contaminant evaluated. For example, a bar that is predominantly green for odor from animals and housing indicates that a producer is employing a relatively high degree of management and incorporating most of the best practices currently available for controlling odor for the animals and housing component of the operation. A mostly white bar indicates there are additional measures or improvements in management that the producer could consider.

(1) For odor, the planner should focus on the scores for the mortalities, manure storage, and feed and water data categories. Land application and animals and housing may also be important categories for odor.

(2) The planner should focus on the scores for the animals and housing, and onfarm roads data categories for particulate matter. Manure storage and land application may also be important categories for particulate matter if dry manure is managed, and feed and water may be an important category if dry feed ingredients are stored or mixed onsite.

(3) For ammonia, the planner should focus on the scores for the feed and water, manure storage, land application, animals and housing, and collection and transfer data categories.

(4) Manure storage and feed and water are the primary data categories of importance for hydrogen sulfide and methane.

(5) For volatile organic compounds, the planner should focus on the scores for the manure storage, feed and water, and animals and housing data categories.

(6) Feed and water, manure storage, and land application are the primary data categories for nitrous oxide.

D. Keep in mind that the scores (i.e., the amount of green in a bar) reflect the degree to which an operation has incorporated all of the possible practices needed that would effectively minimize air emissions from the facility. Trade-offs may exist such that all categories of emissions cannot effectively be minimized. Because each livestock or poultry operation and its infrastructure is unique, the reported scores cannot be generalized to compare one operation to another. Rather, NAQSAT is designed to provide a score for the current management of an operation relative to the best possible management of that particular operation. Data categories receiving low scores will generally present more easily achievable opportunities.

E. Additionally, scores for each data category (e.g., animals and housing, feed and water, etc.) are not weighted for their relative importance to the overall emissions from the operation. For example, a mostly white bar for ammonia for one category (e.g., onfarm roads) may not necessarily represent an air quality resource concern because of the relatively small contribution of total facility ammonia emissions from that category.

F. After evaluation of the baseline scenario for the operation, the conservation planner will determine whether an air quality resource concern exists.

(1) For the "Emissions of Particulate Matter (PM) and PM Precursors" air quality resource concern, the planner should focus on applicable score bars for particulate matter and ammonia.

(2) The planner should focus on the applicable score bars for volatile organic compounds for the "Emissions of Ozone Precursors" air quality resource concern.

(3) "Emissions of Greenhouse Gases" are related to the score bars for methane and nitrous oxide.

(4) For the "Objectionable Odors" air quality resource concern, the planner should focus on the applicable score bars for odor, volatile organic compounds, hydrogen sulfide, and ammonia.

G. If an air quality resource concern is identified, the planner should next identify potential mitigation practices. There is currently some limited capability in NAQSAT to help identify potential mitigation options, however, the user will utilize all available information for developing an acceptable plan for mitigating the air quality resource concern. Useful external resources include the "Air Quality in Animal Agriculture" page on the eXtension Web page (<http://www.extension.org/pages/15538/air-quality-in-animal-agriculture#.VZxSEP4w9GE>) and the Air Management Practices Assessment Tool (<http://www.agronext.iastate.edu/ampat/>), in addition to any information compiled by the local land-grant university or similar organization.

H. Once potential alternatives are developed, NAQSAT can be used further to evaluate the effects of changing practices or implementing management changes on the scores for each alternative. With NAQSAT, when a practice in one management area is implemented or improved, the scores for that area are adjusted. Changing a practice in one part of the farm may impact emissions from another source within the farm. Also, changing a practice to reduce emission of one air contaminant may actually increase the emission of another air contaminant. Users should consider how these changes occur and recognize the importance of each air contaminant in relation to the air quality resource concerns at the particular operation. Comparing results from multiple runs of the program may also highlight unintended consequences of a particular mitigation alternative.

I. NAQSAT will not be used to evaluate regulatory compliance or to assess the economic merits or logistical practicality of possible mitigation options. Users are encouraged to utilize their full knowledge of the operation, including producer goals and priorities, in developing acceptable conservation alternatives for the operation.

309.4 Contact for Additional Information

For additional information, contact the National Air Quality and Atmospheric Change Technology Development Team at the West National Technology Support Center.