

Air Quality and Atmospheric Change On-Farm Assessment Checklist

1. Is the farm involved in crop production or agroforestry?

If yes: Go to Question 2

If no: Go to Question 6

2. Is the farm involved in field crop production?

If yes: A. Identify potential emissions and solutions

Examples of potential emissions and solutions include:

- PM emissions from tillage/soil disturbance/land preparation/planting operations
 - Conservation/reduced/minimum/no tillage
 - Reduced tillage intensity
 - Combine operations to minimize passes
 - Utilize irrigation to maintain soil moisture content
 - Utilize windbreaks, shelterbelts, or wind barriers
- Emissions from fertilization (NH₃, N₂O, NO_x)
 - Utilize efficient nutrient management
 - Inject or incorporate fertilizers and manures
 - Utilize precision application methodologies
- Emissions from pesticide/herbicide/insecticide application (VOC, PM)
 - Utilize precision application methodologies
 - Utilize low-VOC formulations
 - Utilize integrated pest management methodologies
 - Conduct operations under more favorable meteorological conditions
 - Utilize organic production techniques

B. Go to Question 3

If no: Go to Question 3

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3. Is the farm involved in orchard or vineyard crop production?

If yes: A. Identify potential emissions and solutions

Examples of potential emissions and solutions include:

- PM emissions from tillage/soil disturbance/land preparation/planting operations
 - Conservation/reduced/minimum/no tillage
 - Reduced tillage intensity
 - Combine operations to minimize passes
 - Utilize irrigation to maintain soil moisture content
 - Utilize windbreaks, shelterbelts, or wind barriers
- Emissions from fertilization (NH₃, N₂O, NO_x)
 - Utilize efficient nutrient management
 - Inject or incorporate fertilizers and manures
 - Utilize precision application methodologies
- Emissions from pesticide/herbicide/insecticide application (VOC, PM)
 - Utilize precision application methodologies
 - Utilize low-VOC formulations
 - Utilize integrated pest management methodologies
 - Conduct operations under more favorable meteorological conditions
 - Utilize organic production techniques
- PM emissions from harvesting operations
 - Combine operations to minimize passes
 - Manage orchard row surfaces to minimize bare dry soil
 - Utilize hand harvesting techniques

B. Go to Question 4

If no: Go to Question 4

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4. Is the farm involved in agroforestry or does it contain a working forest?

If yes: A. Identify potential emissions and solutions

Examples of potential emissions and solutions include:

- PM emissions from tillage/soil disturbance/land preparation/planting operations
 - Conservation/reduced/minimum/no tillage
 - Reduced tillage intensity
 - Combine operations to minimize passes
 - Utilize irrigation to maintain soil moisture content
 - Utilize windbreaks, shelterbelts, or wind barriers
- Emissions from fertilization (NH_3 , N_2O , NO_x)
 - Utilize efficient nutrient management
 - Inject or incorporate fertilizers and manures
 - Utilize precision application methodologies
- Emissions from pesticide/herbicide/insecticide application (VOC, PM)
 - Utilize precision application methodologies
 - Utilize low-VOC formulations
 - Utilize integrated pest management methodologies
 - Conduct operations under more favorable meteorological conditions
 - Utilize organic production techniques

B. Go to Question 5

If no: Go to Question 5

5. Does the farm utilize prescribed burning or burning to remove residue, removals, or left-over biomass?

If yes: A. List as a source and identify potential solutions

Examples of potential emissions and solutions include:

- Combustion emissions (PM, NO_x , CO_2 , VOC, NH_3 , CH_4 , N_2O)
 - Implement alternatives to burning, such as utilizing biomass
 - Promote more efficient burning
 - Implement a prescribed burning and smoke management plan

B. Go to Question 6

If no: Go to Question 6

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6. Is the farm involved in animal production?

If yes: Go to Question 7

If no: Go to Question 13

7. Does the farm utilize pasture-grazed or range-grazed animal production techniques?

If yes: A. List animal activities as a potential source and identify potential solutions

Examples of potential emissions and solutions include:

- PM emissions from animal activity on bare ground
 - Utilize prescribed grazing or range management
 - Keep animals away from bare ground
- Manure accumulation from excessive animal congregation (VOC, odorous sulfur compounds, CH₄, NH₃, PM, N₂O, NO_x)
 - Utilize prescribed grazing or range management
 - Minimize animal congregation by rotating supplemental water, feed, and shelter

B. Go to Question 8

If no: Go to Question 9

8. Does the farm conduct prescribed burning activities on pastureland or rangeland?

If yes: A. List as a source and identify potential solutions

Examples of potential emissions and solutions include:

- Combustion emissions (PM, NO_x, CO₂, VOC, NH₃, CH₄, N₂O)
 - Implement alternatives to burning, such as utilizing biomass
 - Promote more efficient burning
 - Implement a prescribed burning and smoke management plan

B. Go to Question 9

If no: Go to Question 9

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9. Does the farm utilize concentrated animal production techniques (including feeding and working pens for normally pastured, grazed, or open-range animals)?

If yes: Go to Question 10

If no: Go to Question 13

10. Does the farm utilize enclosed or partially-enclosed animal confinement areas?

If yes: A. List enclosed and partially-enclosed areas and identify potential emissions and solutions

Examples of potential emissions and solutions include:

- PM emissions from animal dander and activity
 - Keep animals clean
 - Periodically inspect and/or replace bedding/litter
 - Maintain appropriate building ventilation
 - Utilize an add-on control device, such as a biofilter or scrubber
 - Utilize a windbreak, shelterbelt, or wind barrier
- Emissions from manure accumulation (NH₃, VOC, odorous sulfur compounds, CH₄, PM, N₂O, NO_x)
 - Remove manure periodically
 - Add additional bedding/litter to offset manure accumulation
 - Periodically inspect and/or replace bedding/litter
 - Maintain appropriate building ventilation
 - Utilize an add-on control device, such as a biofilter or scrubber
 - Utilize a windbreak, shelterbelt, or wind barrier
 - Minimize water leaks into confinement area

B. Go to Question 11

If no: Go to Question 11

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11. Does the farm utilize open pens, lots, or corrals?

If yes: A. List as a source and identify potential solutions

Examples of potential emissions and solutions include:

- PM emissions from animal dander and activity
 - Keep animals clean
 - Maintain lot surface to promote drainage
 - Provide shade to promote a loafing area
 - Add fibrous material to pen surface
 - Feed young stock during evening hours
 - Utilize a windbreak, shelterbelt, or wind barrier
- Emissions from manure accumulation (NH₃, VOC, odorous sulfur compounds, CH₄, PM, N₂O, NO_x)
 - Remove manure periodically
 - Maintain a thin compacted manure surface
 - Minimize animal congregation by encouraging movement
 - Maintain lot surface to promote drainage
 - Periodically inspect and remove manure ridges along fencelines
 - Minimize water leaks into confinement area
 - Utilize a windbreak, shelterbelt, or wind barrier

B. Go to Question 12

If no: Go to Question 12

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12. Does the farm collect and manage manure?

If yes: A. List as a source and identify potential solutions

Examples of potential emissions and solutions include:

- Emissions from manure collection (PM, VOC, NH₃)
 - Minimize manure disturbance during collection
 - Conduct manure collection operations during favorable meteorological conditions
 - When collecting solid manure, maintain an appropriate moisture content to minimize PM emissions
 - Collect solid and liquid manures separately
- Emissions from manure decomposition (VOC, CH₄, NH₃, odorous sulfur compounds, PM, N₂O, NO_x)
 - Utilize feed management to minimize manure production and/or nutrients
 - Separate solid and liquid manures
 - Cover and vent manure storages
 - Avoid manure spillage and clean up spilled manure expeditiously
 - Manage physical characteristics of manure (temperature, pH, moisture content, etc.)
 - Minimize manure disturbance or agitation

B. Go to Question 13

If no: Go to Question 13

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13. Does the farm have any mobile combustion equipment (tractors, trucks, front-end loaders, etc.) on-site?

If yes: A. List mobile equipment and identify potential emissions and solutions

Examples of potential emissions and solutions include:

- Combustion emissions (PM, NO_x, CO₂, VOC, NH₃, CH₄, N₂O)
 - Perform regular tune-ups and maintenance on combustion equipment
 - Minimize idling time or turn equipment off during periods of inactivity
 - Replace older, less efficient equipment with more efficient or non-combustion equipment
- PM emissions from vehicle travel (higher on unpaved areas)
 - Maintain vegetation on vehicle travel surfaces
 - Pave heavily-used vehicle travel surfaces
 - Utilize dust suppressants/palliatives, such as water, wood chips, chemical additives, etc.
 - Implement speed reduction techniques, such as posted speed limits, barriers, etc.
 - Add a layer of aggregate, such as washed gravel, rock, etc., to the travel surfaces

B. Go to Question 14

If no: Go to Question 14

14. Does the farm have any non-mobile combustion equipment (irrigation pumps, emergency generators, boilers, grain dryers, etc.) on-site?

If yes: A. List combustion equipment and identify potential emissions and solutions

Examples of potential emissions and solutions include:

- Combustion emissions (PM, NO_x, CO₂, VOC, NH₃, CH₄, N₂O)
 - Perform regular tune-ups and maintenance on combustion equipment
 - Minimize idling time or turn equipment off during periods of inactivity
 - Replace older, less efficient equipment with more efficient or non-combustion equipment

B. Go to Question 15

If no: Go to Question 15

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15. Does the farm have any exposed and/or untreated surface areas (unpaved parking lots, barren yards, etc.)?

If yes: A. List as a source and identify potential solutions

Examples of potential emissions and solutions include:

- PM emissions from wind erosion
 - Maintain vegetation on exposed/untreated surfaces
 - Utilize dust suppressants/palliatives, such as water, wood chips, chemical additives, etc.
 - Add a layer of aggregate, such as washed gravel, rock, etc., to the exposed/untreated surfaces

B. Go to Question 16

If no: Go to Question 16

16. Does the farm have any material storage areas (feed piles, manure piles, grain storage, diesel tanks, fertilizer tanks, etc.) on-site?

If yes: A. List storage areas and identify potential emissions and solutions

Examples of potential emissions and solutions include:

- PM emissions from handling or moving solid material
 - Avoid spillage of material and clean up spilled material expeditiously
 - Cover material storage areas
 - Store material in a structure or other enclosure device
 - Remove material from storage areas in a manner that minimizes the disturbed surface area of the material
- VOC emissions from volatilization of fuels and liquids
 - Minimize liquid storage temperature
 - Utilize a vapor recovery device on the liquid storage device
 - Paint outside liquid storages a lighter color
 - Minimize disturbance or agitation of the liquid

B. Go to Question 17

If no: Go to Question 17

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17. Does the farm conduct any material mixing operations (feed mixers, composters, liquids mixers, etc.) on-site?

If yes: A. List mixing operations and identify potential emissions and solutions

Examples of potential emissions and solutions include:

- PM emissions from handling or moving solid material
 - Avoid spillage of material and clean up spilled material expeditiously
 - Place materials with higher moisture content into mixer before other materials
 - Add organic oils or moisture to extremely dry material

B. Go to Question 18

If no: Go to Question 18

18. Does the farm conduct any trash burning on-site?

If yes: A. List as a source and identify potential solutions

Examples of potential emissions and solutions include:

- Combustion emissions (PM, NO_x, CO₂, VOC, NH₃, CH₄, N₂O)
 - Implement alternatives to burning, such as landfilling or other trash removal
 - Promote more efficient burning

B. End

If no: End