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, NOₓ)
     • 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
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, NOₓ)
     • 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 (NH₃, N₂O, NOₓ)
             • 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, NOₓ, 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 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, NOₓ)  
   - 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, NOₓ, 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, NOₓ)
             • 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, NOₓ)
             • 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
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, NOₓ)
     - 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
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, NO₅, 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, NO₅, 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, NOx, 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