

Findings and Recommendations: Nr Mitigation in/from Populated Areas
(Drafted by Stacey April 11)

Air

Power Sector

1. Finding: Basic emission control technologies are not universally applied
Recommendation: Apply best available technologies
2. Finding: Alternatives to fossil fuels will decrease Nr emissions
Recommendation: Promote use of alternative fuels with full evaluation of comprehensive impacts and benefits
3. Finding: Newer fossil fuel facilities may have benefits for Nr emission controls over older facilities
Recommendation: Promote replacement of older facilities where appropriate when, on balance, environmental benefits are evident
4. Finding: Opportunities exist for reuse of both Nr and CO₂ that should be considered in Nr management
Recommendation: Evaluate and implement alternative uses and reuses of waste streams of Nr and CO₂
5. Finding: Market mechanisms, such as cap and trade, can accelerate Nr control progress and reduce costs
Recommendation: Explore and support cap and trade possibilities that meet the goal of more rapid progress towards Nr targets

Mobile/Transportation

1. Finding: State of the art technologies for Nr and CO₂ control are not currently applied to road and off-road vehicles
Recommendation: Apply state-of-the-art technologies
2. Finding: Gains in fuel efficiency can be attained with better technology and changes in vehicle size
Recommendation: Apply best technologies to meet more aggressive CAFÉ targets, including shifts to smaller, more efficient vehicles.
3. Finding: The number of miles traveled for both on and off road vehicles can be reduced
Recommendation: Promote lifestyle changes that include more conservation minded approaches such as mass transit, telecommuting, and smart growth.

Land

1. Finding: In peopled areas, Nr additions are a relatively small component of the total loads, but can be locally significant and warrant management actions
Recommendation: Identify and implement regulatory and voluntary management activities to decrease Nr loads from fertilizers and homeowner pet and livestock wastes.
2. Finding: Lawn and landscape fertilization, if improperly managed, can contribute a high percentage of applied Nr loads to surface and ground waters.
Recommendation: Through outreach and education, promote wise use of fertilizers, including appropriate uses of turf varieties, other landscape plantings, and alternatives that focus on native species, and maintenance practices that minimize supplemental Nr needs.
3. Finding: Home pets and livestock, which often includes large animals such as horses in relatively confined areas, can contribute significant amounts of Nr to the peopled landscape.
Recommendation: Through outreach and education, as well as local regulation, promote homeowner management practices for pet and livestock wastes and afford opportunities for disposal, including composting
4. Finding: Landscape management and preservation practices can help ensure that Nr treatment opportunities on the land are maximized and decrease Nr leakage from both natural and anthropogenic sources from the landscape.
Recommendation: Promote and require through regulation land preservation practices that maintain or restore the natural topography, soil character, and vegetative cover of the landscape and/or minimize hardening of the landscape with impervious cover or by soil compaction.
5. Finding: Flood control practices can both lessen land treatment of Nr and also offer an opportunity for management through creation of wetlands.
Recommendation: Evaluation flood control practices to assure every opportunity to mitigate Nr enrichment is taken
6. Finding: The concept of “critical loads” will help establish deposition limitations protective of terrestrial and aquatic ecosystems for both acidification and nutrient enrichment purposes.
Recommendation: Employ critical loads principles to preserve natural environmental ecosystems on and land and water and to protect Nr mitigative features.

Water

1. Finding: In peopled landscapes, point sources of Nr from sewage treatment and industrial plants, are a dominant source of Nr
Recommendation: Decrease loads of Nr considering both input management, e.g., promoting lower protein diets and traditional treatment technologies that remove nitrogen from the waste stream. In this process, evaluate effects on energy usage, air emissions, and effluent reuse (e.g., irrigation, algae for biofuels)
2. Finding: Individual and community subsurface sewage disposal systems can contribute Nr to ground water, which provides baseflow to surface waters.
Recommendation: Apply best technologies to these systems and ensure proper siting to maximize Nr removal opportunities within the landscape, including downstream wetlands.
3. Finding: Storm water and nonpoint sources contribute significantly to the Nr load to surface and ground waters. Sources of Nr to stormwater and nonpoint runoff come from both air and land.
Recommendation: Broadly apply best management practices to SW/NPS runoff to retain and treat Nr before discharging to surface waters.

Ancillary Concerns

1. Finding: Character of “peopled” land as to forest/grass/human components will affect data interpretation and management actions.
Recommendation: Land cover included in “peopled” category should be further defined to cover urban/suburban and associated forest and grassland covers.

2. Finding: Other factors will affect Nr cycling and treatment in peopled landscapes, especially climate change.
Recommendation: Consider effects of climate change on Nr environmental processes and treatment technologies.

Outreach and Education

1. Finding: Significant Nr management gains can be achieved through outreach, education, and other voluntary mechanisms that engage society.
Recommendation: Promote O&E, including through cooperative efforts at all levels of government and among agencies

April 11, 2008 Draft by a sub-group of the Integrated Nitrogen Committee to Assist with Meeting Deliberations. This is a work in progress, does not reflect consensus advice or recommendations, has not been reviewed or approved by the Integrated Nitrogen Committee or the Chartered SAB and does not represent EPA Policy. Do Not Cite or Quote

Research and Monitoring

To be developed - lots of need.