

# Managing the Regulatory Environment

## ADA's Guidelines for Practice Success™ (GPS™)

### ADA Tip Sheet on Nitrous Oxide

Many dental practices safely use nitrous oxide to as a way to reduce patients' pain and anxiety during treatment. Research done by the National Institute for Occupational Safety and Health (NIOSH) has shown that controls, such as proper system maintenance, ventilation and work practices, can effectively reduce N<sub>2</sub>O concentrations in dental operatories to approximately 25 ppm (45 milligrams per cubic meter) during analgesia administration. This is the exposure limit recommended by NIOSH. Practices that offer nitrous to patients may want to consider following the general work practices detailed below when incorporating nitrous oxide.

- Make sure that the nitrous oxide delivery system is equipped with a scavenging system.
  - ✓ A flow meter, or similar measuring device, should be visible and well maintained to ensure accuracy.
  - ✓ The system's vacuum pump should have a capacity of up to 45 liters of air per minute per workstation.
  - ✓ Masks in various sizes should be available to ensure a proper fit for each patients.
  
- Vent the vacuum and ventilation exhaust fumes outside, for example, through a vacuum system.
  - ✓ Do not place the exhaust system near fresh air intake vents.
  - ✓ Ensure that the general ventilation provides good room-air mixing.
  - ✓ Limit occupational exposure to unscavenged nitrous oxide as much as possible.
    - Chronic exposure, even to as little as a few hours per week, has been associated with adverse health effects.
      - Consider the periodic assessment of staff who work with the nitrous oxide delivery system for exposure.
        - This can be done by asking the staff members to wear personal dosimetry badges or by placing an infrared spectrophotometer in the room.
  
- Test pressure connections for leaks every time the nitrous system is first turned on and each time a gas cylinder is changed.
  - ✓ Inspect all system components, including the reservoir bag, tubings, masks, and connectors, for wear, cracks, holes or tears each day before the initial use of the system.
    - Replace any damaged pieces.
  - ✓ Once all the components have passed inspection, connect the mask to the tubing and turn on the vacuum pump.
    - Ensure that the flow rate is correct, up to 45L/minute or according to the manufacturer's recommendation.
  - ✓ Test high-pressure line connections quarterly for leaks.
    - Applying a soap solution to the lines and connections is one effective way to test for leaks.
      - Another option is to purchase a portable infrared spectrophotometer to test connections.

- Properly fit the mask to each patient.
  - ✓ Make sure that the reservoir bag does not over- or under-inflate while the patient is breathing oxygen before nitrous is administered.
  - ✓ Ask the patient to limit talking during the administration of nitrous.
  - ✓ Also ask the patient to breathe through his/her nose and avoid breathing through the mouth as much as possible.
  - ✓ Be aware that, unless the manufacturer provides reprocessing instructions, masks are single-use disposable items.
  
- During administration, watch for changes in the tidal volume of the reservoir bag and monitor the vacuum pump's flow rate.
  
- After the procedure, deliver 100% oxygen to the patient for five minutes before removing the mask.
  - ✓ This will purge the system, and the patient, of any residual nitrous oxide.

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