Upon successfully completing this session the participant will be able to:

• Explain a brief history of the Inhalant category of drugs.
• Identify common drug names and terms associated with this category.
• Identify common methods of administration for this category.
• Describe the symptoms, observable signs and other effects associated with this category.

CONTENT SEGMENTS

A. Overview of the Category
B. Possible Effects
C. Onset and Duration of Effects
D. Overdose Signs and Symptoms
E. Expected Results of the Evaluation
F. Classification Exemplar

LEARNING ACTIVITIES

Instructor Led Presentations
Review of the Drug Evaluation and Classification Exemplars
Reading Assignments
Video Presentations
Slide Presentations
• Describe the typical time parameters, i.e. onset and duration of effects associated with this category.

• List the clues that are likely to emerge when the drug influence evaluation is conducted for a person under the influence of this category of drugs.

• Correctly answer the “topics for study” questions at the end of this session.

A. **Overview of the Category**

Inhalants are breathable chemicals that produce mind altering results.

Inhalants vary widely in terms of the chemical involved and the specific effects produced.

Depending on the nature of the particular Inhalant, the effects produced may be similar to those of CNS Stimulants, Depressants or Hallucinogens.
There are three major subcategories of Inhalants:

- Volatile Solvents
- Aerosols
- Anesthetic Gases

**Volatile Solvents**

The Volatile Solvents include a large number of readily available substances, none of which are intended by their manufacturers to be used as drugs.

Volatile” means that they evaporate easily to produce fumes.

One widely abused Volatile Solvent is plastic cement, or “model airplane glue.”

Plastic cement includes the following volatile chemicals:

- Toluene
- Acetone
- Naphtha
- Aliphatic Acetates (straight-chained hydrocarbons)
- Hexane
- Cyclohexane
- Benzene
Volatile Solvents

- Fingernail polish remover
- Household cements and glue
- Lighter fluid
- Petroleum products
  - Plastic cement
  - Gasoline
  - Kerosene

Volatile Solvents (Cont.)

- Dry cleaning fluids
- Paints (particularly oil or solvent based)
- Paint thinners
- Spray paints
- Liquid correction fluid
- Engine degreasers

Other frequently abused Volatile Solvents include:

- Fingernail polish remover (contains Acetone)
- Household cements and glues (rubber cements contain Benzene)
- Lighter fluid (contains Naphtha)

Petroleum products:

- Plastic Cement (Model airplane Glue)
- Gasoline
- Kerosene

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Aerosols

Aerosols are chemicals discharged from a pressurized container by the propellant force of a compressed gas.

Commonly abused Aerosols include hair sprays, deodorants, insecticides, glass chillers (freeze spray), and vegetable frying pan lubricants.

e.g., Freon, which is now available primarily in many medical Aerosols.

All of these abused Aerosols contain various hydrocarbon gases that produce drug effects.

The overwhelming majority of abusers of Volatile Solvents and Aerosols are pre-teens and teenagers.

Some reasons:

• These substances appear in nearly every household.
• They are inexpensive and readily accessible.
Anesthetic Gases

The third subcategory is Anesthetic Gases. Anesthetic gases are drugs that abolish pain. They are used medically during surgical procedures such as childbirth, dental surgery, etc.

Adults may be more frequent users of the anesthetic gases subcategory than of the Aerosols or Volatile Solvents.

Anesthetic gases that sometimes are abused as Inhalants:

- Ether
- Nitrous Oxide

Many of these substances have a long history of medical and illicit use, e.g., Ether abuse dates to the 1790’s in England.

Nitrous Oxide has been used since 1845. It is still used in certain dental procedures. Nitrous Oxide is a propellant for whipped cream. Drug paraphernalia stores often sell Nitrous Oxide in cartridges that are identical to carbon dioxide containers. They are termed by users “whippets,” and are allegedly sold to purchasers as devices to propel whipped cream.

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Other common Inhalants in this subcategory that do not relieve pain are:

- Amyl Nitrite
- Butyl Nitrite (Isobutyl Nitrite)

Nitrates are vasodilating substances used medically to relieve angina pectoris (heart-related chest pain) and for treatment of cyanide poisoning. In angina, the nitrates work by dilating blood vessels near the heart so that more blood can reach the heart.

Nitroglycerin, ordinarily not abused as an intoxicant, is also used for this purpose.

Isobutyl Nitrite and Butyl Nitrite have essentially identical effects of Amyl Nitrite.

Anesthetic gases can dilate the blood vessels around the heart thus causing a lowered blood pressure.

Common slang and brand names for the nitrites are: “Rush” and “Locker Room.”

Examples: Amyl Nitrite and Butyl Nitrite are sold in small glass bottles or bulbs. The user simply opens the bottle and breathes in the fumes. They have been marketed in drug paraphernalia stores as room deodorizers.
Inhalants obviously are ingested by breathing, or inhaling the fumes.

- Some are ingested directly from the source.
- Some are soaked into rags, handkerchiefs, or tissue paper for repeated inhalation.
- Some are placed in paper or plastic bags which the user places over the face or head. These may be placed in twist lock beverage containers.
- Some are used by breathing the fumes or vapors from balloons.

Some common street names that Inhalant users use are: huffing, hacking, ballooning and glading.
B. Possible Effects

The effects of Inhalants vary somewhat from one substance to another.

In fact, many of the Inhalants are classified as Depressants in medical texts. Their effects, consequently, often mirror alcohol intoxication.

Common effects of Inhalants include:

• Altered shapes and colors
• Antagonistic behavior
• Bizarre thoughts
• Distorted perceptions of space and time
• Dizziness and numbness
• Drowsiness and weakness
• Floating sensations
• Inebriation similar to alcohol intoxication
• Intense headaches
• Light headedness
• Nausea and excessive salivation
• Possible hallucinations

Persons under the influence of Inhalants generally will appear confused and disoriented, and their speech will be slurred.

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C. **Onset and Duration of Effects**

Inhalants’ effects are felt virtually immediately.

Duration depends on the particular substance.

- The effects of nitrous oxide last 5 minutes or less.
- Amyl Nitrite and Isobutyl Nitrite produce effects that last a few seconds up to 20 minutes.

Users claim these substances enhance sexual excitement. This may occur from dilation of genital arteries (vasodilation) and relaxation of other smooth muscles.

Inhalation of these produces a distinct “rush” similar to that of the related substance, Nitrous Oxide.

Glue, paint, gasoline and other commonly abused Inhalants produce effects that last several or more hours. (Generally 6-8 hours for most volatile solvents depending on exposure).
D. Overdose Signs and Symptoms

There is a risk of death due to overdose of Inhalants.

All volatile solvents make the heart more sensitive to adrenaline. This sometimes causes a dangerous cardiac arrhythmia. The term "sudden sniffing death" (SSD) has been used to describe death resulting from physical exertion and the breathing of Inhalants in an enclosed, poorly ventilated space.

Some Inhalants will depress the Central Nervous System to the point where respiration ceases. Others can produce instant death from heart failure.

Overdoses of Inhalants frequently induce severe nausea and vomiting. If the user vomits while he or she is unconscious, death can result from aspiration of the vomitus.

Death can also result indirectly, if a person places a plastic bag over the head, loses consciousness and suffocates.

Long term abuse of Inhalants can cause permanent damage to the Central Nervous System, and greatly reduce mental and physical abilities.

Evidence also exists of liver, kidney, bone and bone marrow damage resulting from long term Inhalant abuse.

There are no well-defined withdrawal symptoms for these substances. Physical dependence has not been documented, although habituation is common.
E. Expected Results of the Evaluation

Evaluation of Subjects Under the Influence of Inhalants

• HGN - Present
• VGN - Present (high dose for that individual person)
• Lack of Convergence - Present
• Impaired performance will be evident on Modified Romberg Balance, Walk and Turn, One Leg Stand and Finger to Nose tests

Observable Evidence of Impairment

Eye Exam

• HGN: Horizontal Gaze Nystagmus will generally be present.
• VGN: Vertical Gaze Nystagmus may be present.
• LOC: Lack of Convergence will be present.

Psychophysical Exercise

Drug Evaluation Tests

Performance on the Modified Romberg Balance, Walk and Turn, One Leg Stand, and Finger to Nose tests will be impaired.
**Vital Signs**

Pulse will be up.

Pulse increase is due to many factors, including oxygen displacement. The heart may beat faster in order to supply body tissues with a sufficient supply of oxygen.

Blood pressure will be up or down.

Note: The Anesthetic Gases generally lower blood pressure while elevating pulse rate. The Volatile Solvents and the Aerosols usually elevate both blood pressure and pulse rate.

The lowering of blood pressure by Anesthetic Gases is due to their vasodilation effect. The heart compensates for this vasodilation by increasing its heart rate.

Effect on body temperature may be up, down or normal range.

**Dark Room**

Pupil size will be normal (DRE Average Ranges) but may be dilated.

Anesthetic gases may produce some dilation, although usually not to the extent seen with CNS Stimulants or Hallucinogens. **No** Inhalants produce pupillary constriction.
Evaluation of Subjects Under the Influence of Inhalants (Cont.)

General Indicators:
- Bloodshot, watery eyes
- Confused
- Disoriented
- Flushed face, possibly sweating
- Intense headaches

General Indicators (Cont.)
- Lack of muscle control
- Non-communicative
- Normal or Flaccid muscle tone
- Odor of the inhaled substance
- Possible nausea
- Possible traces of the substance around the face and nose
- Slow, thick, slurred speech

- Lack of muscle control
- Non-communicative
- Normal or Flaccid muscle tone
- Odor of the inhaled substance
- Possible nausea
- Residue of the substance around the face and nose and on the hands or clothing
- Slow, thick, slurred speech

Speech usually clears up quickly when substance is no longer being inhaled.
### Inhalants Symptomatology Chart

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HGN</td>
<td>Present</td>
</tr>
<tr>
<td>VGN</td>
<td>Present (High dose for that individual)</td>
</tr>
<tr>
<td>Lack of Convergence</td>
<td>Present</td>
</tr>
<tr>
<td>Pupil Size</td>
<td>Normal[^1]</td>
</tr>
<tr>
<td>Reaction to Light</td>
<td>Slow</td>
</tr>
<tr>
<td>Pulse Rate</td>
<td>Up</td>
</tr>
<tr>
<td>Blood Pressure</td>
<td>Up or Down[^2]</td>
</tr>
<tr>
<td>Temperature</td>
<td>Up, Down or Normal</td>
</tr>
<tr>
<td>Muscle Tone</td>
<td>Normal or Flaccid</td>
</tr>
</tbody>
</table>

[^1]: Normal but may be dilated
[^2]: Down with anesthetic gases – Up with volatile solvents & aerosols

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### Notes:

[Note sections can be added here for additional information or observations.]

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### Inhalants

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### Drug Evaluation and Classification

**Exemplar Demonstrations**

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### F. Classification Exemplar
Topics for Study

1. What are the three major subcategories of Inhalants?

2. What are some of the principal active ingredients in many volatile substances?

3. In what important respect do the effects of Anesthetic Gases differ from the effects of Volatile Solvents and Aerosols?

4. Do any of the subcategories of Inhalants cause pulse rate to decrease?

5. The effects of Amyl Nitrite and Butyl Nitrite last from a few seconds to up to ______ minutes.
DRUG INFLUENCE EVALUATION

Session XIX - #1

Evaluator: 

DRE # 

Rolling Log # 

11850 

12-07-015 

Sus. Joe Armstrong, Missouri HP

Case # 12-77997

Sus. Art Amato, Union PD

Arrestee's Name (Last, First, Middle) 

Graves, James L.

Date of Birth 

Sex 

Race 

M

W

6/8/88

Fatal Injury Property

F

P

Arresting Officer (Name, LID) 

Trooper Blaine Adams, MO HP

#7134

Date Examined / Time / Location 

07/04/12 2200 Union PD

Breathe Result: 

Test Refused

Chemical Test: 

Urine Blood

11850

Test or tests refused

Instrument #: 77850

Miranda Warning Given 

6PM

What have you been drinking? 

Coke

How much? 

Time of last drink? 

N/A

What have you eaten today? When? 

Hamburger 6PM

Do you take insulin? 

Yes No

Do you have any physical defects? 

Yes No

Are you under the care of a doctor or dentist? 

Yes No

Are you taking any medication or drugs? 

Attitude: Cooperative

Coordination: Poor, unsteady, barely standing

Sweat: 

Shunted, mumbled

Breath Odor: Paint/chemical odor

Face: 

Paint residue on cheeks and chin

Corrective Lenses: None

Eyes: Reddened Conjunctiva

Blindness: None Left Right

Tracking: Equal Unequal

Glasses: Contacts, if so Hard Soft

Bloodshot Watery

Pupil Size: Equal

Vertigo Vortices

Equal (explain)

Pulse and time

1. 104 / 2215

Lack of Smooth Pursuit

Left Eye

Yes

Convergence

Right Eye

Yes

L R

Sways while balancing

Uses arms to balance

Hopping

Puts foot down

ONE LEG STAND

1 2

First Time 2nd Time

Walk and Turn test

Test stopped - could not stand

Test administered in seated position

Blood pressure: 140/100

Temperature: 98.6

Muscle tone: Normal Flaccid Rapid

What drugs or medications have you been using? "Have any Gold?"

"In the usual." 

How much? Time of use? Where were the drugs used? (Location)

Date / Time of arrest: 07/04/12 21:20

Time DRE was notified: 21:45

Evaluation start time: 2200

Evaluation completion time: 2310

Precise/Station:

DRE # 

11850

Reviewed/approved by / date:

Opinion of Evaluator: 

Hallucinogens Norinic Analgies

Inhalant

CNS Depressant Discontinue Analgies

CNS Stimulant

Author: 

Reviewer: 

Date: 

18 of 21
DRUG INFLUENCE EVALUATION NARRATIVE

Suspect: Graves, James L.

1. **LOCATION:** The evaluation was conducted at the Union Police Department.

2. **WITNESSES:** Sgt. Art Amato of the Union PD witnessed the evaluation.

3. **BREATH ALCOHOL TEST:** Graves had a breath test of 0.00%.

4. **NOTIFICATION AND INTERVIEW OF THE ARRESTING OFFICER:** Writer was requested to contact Trooper Adams at the Union Police Department for a drug evaluation. Trooper Adams advised he arrested Graves for DUI after observing him fail to stop at a red traffic light at Main and 3rd Street. The suspect was cooperative but appeared dazed. He performed poorly on the SFST’s and was arrested for DUI. A can of gold spray paint was located on the front seat of the suspect’s vehicle along with some paint soaked rags.

5. **INITIAL OBSERVATION OF SUSPECT:** Writer first observed the suspect in the interview room at the P.D. He appeared passive and dazed. He had very poor coordination and balance. Gold paint smears were visible on his hands and face.

6. **MEDICAL PROBLEMS AND TREATMENT:** None noted or stated.

7. **PSYCHOPHYSICAL TESTS:** Modified Romberg Balance: The suspect was unable to perform the test and it was stopped for safety reasons. Walk & Turn: The suspect lost his balance three times and the test was stopped for safety reasons. One Leg Stand: The suspect put his foot down three times while standing on the left foot and the test was stopped. He was unable to perform the test when attempting to stand on the right foot and the test was stopped for safety reasons. Finger to Nose: The suspect was allowed to sit down for this test. He used the palm of his hands and touched in the general area of his nose.

8. **CLINICAL INDICATORS:** The suspect had six clues of HGN with a 30 degree angle of onset and a Lack of Convergence. His pulse and blood pressure were elevated and above the DRE average ranges.

9. **SIGNS OF INGESTION:** Paint-like odor on his breath. Paint smears on hands and face.

10. **SUSPECT’S STATEMENTS:** Suspect admitted “huffing” some gold spray paint in his car while in the park to celebrate the 4th of July.

11. **DRE’S OPINION:** In my opinion Graves is under the influence of an **Inhalant** and unable to operate a vehicle safely.

12. **TOXICOLOGICAL SAMPLE:** The suspect provided a blood sample.

13. **MISCELLANEOUS:**
**DRUG INFLUENCE EVALUATION**

**Evaluator:** Trooper Marc Griggs, Iowa State Patrol  
**Rolling Log #:** 8332

**Session XIX - #2**

**Date of Birth:** 9/1/88  
**Date Examined/Time/Location:** 08/07/12 2015 Story Co. Jail

**Breathe Results:** 06:00  
**Chemical Test:** Urine  Blood

**Time Examined:** 9pm  
**Time Refused:** 8:10 pm

**Miranda Warning Given:** Yes  
**Dr. Bryan Beckman:**

**Wide Awake:**  
**No Physical Defects:**

**Are you taking any medication or drugs?**

**Attitude:** Cooperative, slow to respond  
**Coordination:** Poor, staggering at times

**Speech:** Slow, slurred  
**Breath Odor:** Paint-like odor  
**Face:** Flushed

**Corrective Lenses:** None  
**Eyes:** Reddened  
**Blindness:** None  
**Pupil Size:** Equal  
**unequal (explan.)**

**Glasses:**  
**Contacts, if so**  
**Hard**  
**Soft**  

**Pupil:** Normal  
**Bloodshot**  
**Watery**

**Vision:**

**Match and time:**

1. 100 / 2020  
2. 200 / 2100  
3. 26 / 2170

**Modified Romberg Balance:**

Walk and Turn test:

- Cannot keep balance
  - Start too soon
  - Stopping
  - Misstep
  - Steps off
  - Raising arms
  - Actual steps taken

- Test stopped after six steps

**PUPIL SIZE:**

- Left Eye: 5.0  
- Right Eye: 5.0

**Blood pressure:** 146/104

**Temperature:** 98.8

- Normal
- Pupil
- Rigid

**Date / Time of arrest:** 08/07/12 1940

**Officer's Signature:** 8332  
**Reviewed/approved by / date:**

**Opinion of Evaluator:**

- Reasonable  
- Words:  
- No physical defects

**What drugs or medications have you been using?**

**How much?**  
**Time of use?**

**Where were the drugs used?**

**Think / Feel: No**

**Reaction to Light:**

- Normal

**Type of Footwear:** Sandals

- Runny nose, red

- Paint like odor

**REBOUND DILATION:**

- Yes  No

**OPINION OF EVALUATOR:**

- Reasonable
- Words:  
- No physical defects

**Process/Station:**

**Eyes:**

- Reddened
- Bloodshot
- Watery

**Ears:**

- Muffled
- Full

**Mouth:**

- Dry
- Wet

**Body:**

- Rigid
- Flexed

**Conclusion:**

**Nothing observed**
DRUG INFLUENCE EVALUATION NARRATIVE
Suspect: Mashburn, Cathy

1. LOCATION: The evaluation was conducted at the Story County Jail.

2. WITNESSES: The evaluation was recorded by Sergeant Russ Belz of the Story CO SO.

3. BREATH ALCOHOL TEST: Mashburn’s breath test was 0.00%.

4. NOTIFICATION AND INTERVIEW OF THE ARRESTING OFFICER: Writer was notified by radio to contact Trooper Beckman at the Story County Jail for a drug evaluation. Trooper Beckman advised he arrested Mashburn after observing her pull out in front of oncoming traffic nearly causing a crash. The suspect was cooperative but slow to respond to questions. She performed poorly on the SFST’s and was arrested for DUI. After arresting her, Trooper Beckman located a can of paint remover and several rags in her vehicle.

5. INITIAL OBSERVATION OF SUSPECT: Writer first observed the suspect in the interview room at the jail. Her speech was slow and slurred. Her coordination was poor and she staggered several times. Her eyes were watery and bloodshot.

6. MEDICAL PROBLEMS AND TREATMENT: The suspect stated she felt dizzy.

7. PSYCHOPHYSICAL TESTS: Modified Romberg Balance: The suspect had an approximate 3” circular sway and she estimated 30 seconds in 19 seconds. Walk & Turn: The suspect lost her balance twice during the instructions, staggered and nearly fell. The test was stopped after six steps when she again nearly fell. One Leg Stand: After putting her right foot down three times and nearly falling, the test was stopped. Finger to Nose: The suspect had difficulty with this test. She touched the tip of her nose on one of the six attempts. She also used the wrong hand on attempts #5 and #6.

8. CLINICAL INDICATORS: The suspect had six clues of HGN and a Lack of Convergence. Her pulse rates and blood pressure were elevated and above the DRE average ranges.

9. SIGNS OF INGESTION: The suspect had a red, runny nose. Her eyes were bloodshot and watery. She also had a paint-like odor on her breath and clothing.

10. SUSPECT’S STATEMENTS: Suspect admitted drinking a “couple of wine coolers” but denied using any other substances.

11. DRE’S OPINION: In my opinion Mashburn is under the influence of an Inhalant and unable to operate a vehicle safely.

12. TOXICOLOGICAL SAMPLE: The suspect provided a urine sample.

13. MISCELLANEOUS: