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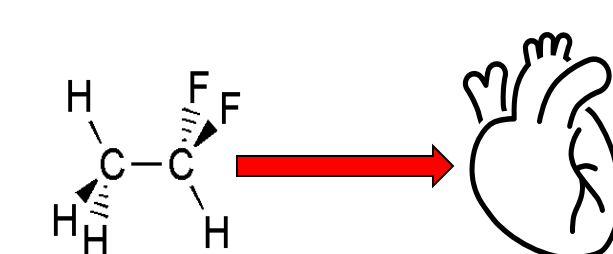
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## Introduction

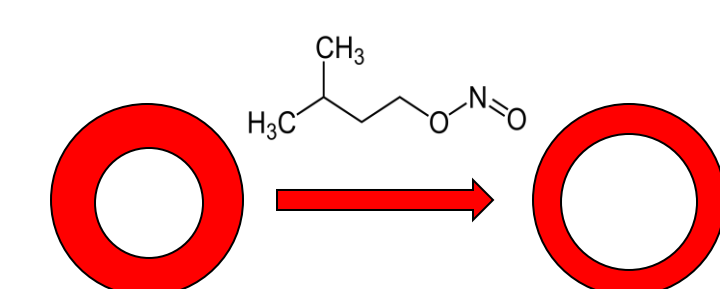
- Inhalant use disorder is a lesser known, yet a significant public health concern, with approximately 2.2 million people reporting use in the past year in the United States.
- Inhaled substances include aerosols, household cleaning agents, anesthetics, and glues and more recently, amyl nitrites
- The accessibility of these products is a risk factor by adolescents/children more often than adults.
- While the intended effects are to produce a similar "high" to alcohol intoxication by rapid diffusion into the lungs and bloodstream, the risk for organ damage extends beyond the brain and lungs.
- This case series presents two patients with an inhalant use disorder, highlighting the potential cardiovascular complications and management challenges.

## Proposed Mechanisms of Cardiac Injury

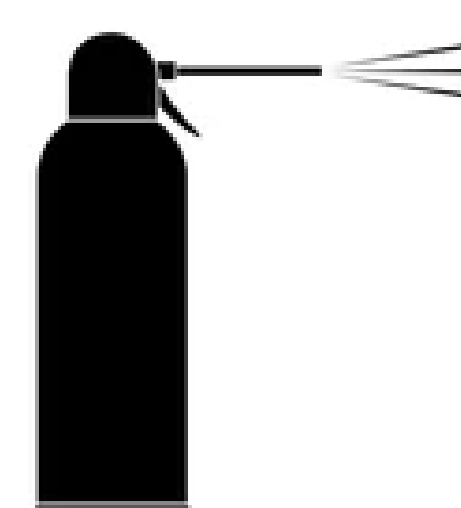
- Air dusters (1,1-difluoroethane): direct hydrocarbon toxicity on the myocardium, causing increased sensitization to catecholamines.



- Poppers (amyl nitrite): vasodilation leading to sudden blood pressure drop, increasing myocardial demand and risk of acute coronary syndrome.



## Case Studies



Case 1

- A 61-year-old male reported a 10-year history of inhaling approximately 20 air duster cans daily for erotic asphyxiation, with a recent escalation to 74 cans in one week.
- This intensive use led to a period of unconsciousness, direct skin contact with the canisters, resulting in thermal injuries to the anterior torso and left arm requiring admission to the burn unit.
- He had myocardial injury with cardiac enzyme elevation and atrial fibrillation with a rapid ventricular response >200 bpm, requiring cardioversion in the emergency room.
- His intermediate partial thickness burns were managed conservatively, and atrial fibrillation was controlled with calcium channel blocker.



Case 2

- A 71-year-old male with a history of polysubstance use, including cocaine, cannabis and amyl nitrite ("poppers") for sexual euphoria developed NSTEMI within a few days of admission for psychiatric management of depression.
- He reported a regular use of amyl nitrite for sexual euphoria. Management of this patient involved addressing both the acute coronary syndrome and the underlying substance use disorder.
- The patient was strongly advised to cease all substance use, with particular emphasis on avoiding inhalants due to their vasodilatory effects and the patient's coronary artery disease and recent RCA stent placement.

## Discussion

- These cases highlight the diverse presentations and complications associated with inhaled substance use, including difluoroethane and amyl nitrite.
- Both cases emphasize the importance of comprehensive management, addressing both the acute medical issues and the underlying substance use disorders.
- Social determinants of health have a defining role in substance use disorder.
- A thorough social history is warranted in all, but especially at-risk patients, and may provide evidence for cardiac events without an otherwise unknown cause.

## Conclusion

- These cases demonstrate the challenges in managing patients with complex substance use histories and the importance of a multi-disciplinary approach to care.
- The involvement of cardiology, addiction medicine, and psychiatric services was crucial in providing comprehensive care to these patients.

## References

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Artwork: <https://www.them.us/story/everything-you-need-to-know-about-poppers-and-how-to-stay-safe> (Doris Liou)