
Information and recommendations for patients

- Patients exposed only to metal carbonyl vapors do not pose a significant risk of secondary contamination. Patients whose clothing or skin is contaminated with liquid metal carbonyls or solvents containing metal carbonyls can secondarily contaminate rescue and medical personnel by direct contact or through evaporation of metal carbonyls.
 - Metal carbonyls are irritating to all tissues, in particular to the respiratory tract. Exposure may result in eye and skin irritation, coughing, chest pain, dyspnea. Swelling of the throat and signs of accumulation of fluid in the lungs (shortness of breath, cyanosis, expectoration, cough) may occur.
 - There is no antidote to be administered to counteract the effects of metal carbonyls. Treatment consists of supportive measures.
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Substance information

Metal carbonyls: nickel tetracarbonyl – Ni(CO)₄, CAS 13463-39-3; iron pentacarbonyl – Fe(CO)₅, CAS 13463-40-6.

Synonyms: nickel carbonyl, tetracarbonyl nickel; iron carbonyl, pentacarbonyl iron.

These guidelines are based on information about some of the most frequently used metal carbonyls: nickel tetracarbonyl and iron pentacarbonyl. Recommendations for other metal carbonyls might be similar. However, these guidelines do not cover special features potentially related to other metal carbonyls.

Synonyms: nickel carbonyl, tetracarbonyl nickel; iron carbonyl, pentacarbonyl iron.

At room temperature nickel tetracarbonyl and iron pentacarbonyl are colorless to yellow liquids. Metal carbonyls have a musty odor. When heated to decomposition, they emit toxic fumes of metal oxides and carbon monoxide.

Nickel tetracarbonyl is used in the refining of nickel and as a catalyst for organic synthesis. Iron pentacarbonyl has been used as an antiknock agent in gasoline.

What immediate health effects can result from exposure to metal carbonyls?

Most exposures to metal carbonyls occur from breathing the vapor. Exposure to small amounts irritates the eyes, nose, throat and lungs causing cough, chest pain, and shortness of breath. Higher exposure levels can cause severe breathing difficulty, inflammation of the lung, and accumulation of fluids in the lung.

Are any future health effects likely to occur?

A single small exposure from which a person recovers quickly is not likely to cause delayed or long-term effects. After serious or repeated exposures permanent breathing difficulty might develop. Eye and skin exposure to liquid metal carbonyls may result in tissue irritation.

Follow-up instructions

Keep this page and take it with you to your next appointment. Follow only the instructions checked below.

- () Call your doctor or the Emergency Department if you develop any unusual signs or symptoms within the next 24 hours, especially:
 - coughing or wheezing
 - difficulty breathing or shortness of breath
 - increased pain or a discharge from exposed skin or eyes
 - chest pain or tightness
- () No follow-up appointment is necessary unless you develop any of the symptoms listed above.
- () Call for an appointment with Dr. _____ in the practice of _____
When you call for your appointment, please say that you were treated in the Emergency Department at _____ Hospital by _____ and were advised to be seen again in ___ days.
- () Return to the Emergency Department/_____ Clinic on (date) _____ at _____ am/pm for a follow-up examination.
- () Do not perform vigorous physical activities for 1 to 2 days.
- () You may resume everyday activities including driving and operating machinery.
- () Do not return to work for ___ days.
- () You may return to work on a limited basis. See instructions below.
- () Avoid exposure to cigarette smoke for 72 hours; smoke may worsen the condition of your lungs.
- () Avoid drinking alcoholic beverages; alcohol may worsen your clinical condition.
- () Avoid taking the following medications: _____

- () You may continue taking the following medication(s) that your doctor(s) prescribed for you: _____

- () Other instructions: _____

Signature of patient _____ Date _____
Signature of physician _____ Date _____

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