

HPMC Occupational Medical Services Chemical Exposure Evaluation Process

You are here for a medical evaluation due to a chemical exposure. This handout describes the process you will experience while you are here.

NOTE: EMPLOYEES WITH SEVERE SHORTNESS OF BREATH, COUGH, OR OTHER SERIOUS or WORSENING SYMPTOMS MAY BE TRANSFERRED BY AMBULANCE TO THE NEAREST HOSPITAL. Employees going to an HPMC clinic will be given priority in evaluation over others already in the clinic. Employees with the most prominent or severe symptoms will be evaluated first.

CLINICAL ASSESSMENT

- **TELL THE HEALTHCARE PROVIDER** what you experienced at the time of exposure and what symptoms—if any—you've had since then.
- **VITAL SIGNS** will be taken in the triage area.
 - You will be asked how you feel, and how you look will be noted.
 - Your temperature, blood pressure, pulse, respiration, and finger pulse oximetry (measurement of oxygen in your blood) will be checked.
 - You will need to provide contact information to the medical provider for follow-up.
 - **BASELINE LAB TESTS** (Blood and Urinalysis) will be offered to all exposed workers. **A second/follow-up set of lab tests will be collected 24-48 hours after your initial visit.**
 - **NOTE: IF ANY LAB RESULTS ARE MARKEDLY ABNORMAL, MEDICAL PROVIDERS WILL BE CALLED 24/7 BY THE LAB, AND, IF NEEDED, CAN IMMEDIATELY CONTACT THE EMPLOYEE.**
 - **CHEST X-RAY AND PULMONARY FUNCTION TESTS (SPIROMETRY & ELECTROCARDIOGRAM)** may be ordered based on your clinical signs and symptoms.

CONCLUDING YOUR INITIAL EVALUATION

- Employees with minimal or no symptoms and a normal exam may be returned to work with or without restrictions while lab test results are pending.
- Employees are strongly encouraged to return to HPMC, seek Emergency Room care, or visit their Private Medical Provider if symptoms worsen.
- Schedule your 24/48-hour follow-up blood draw and urinalysis.
- Follow-up visits with a healthcare professional at HPMC are normally scheduled 7-10 business days after the initial visit to reassess the employee's wellbeing and to review your lab results.
- Additional appointments for follow-up evaluation and/or repeat lab testing are scheduled at the discretion of the provider and/or if requested by the worker.

Turn this page over for a description of tests that might be performed on you. You have the right to refuse any and all tests.

NOTE: There are no specific blood or urine tests available for the actual chemicals themselves to which you may have been exposed other than those listed.

DESCRIPTION OF CHEMICAL EXPOSURE TESTS

CBC w/diff → A complete blood count (red cells, white cells, platelets) with analysis of types of white blood cells present.

- Red blood cells are essential in delivering oxygen. White blood cells are necessary in immune system responses. Platelets are small particles that are vitally important in blood clotting. A decrease of white cells or platelets could suggest a toxic effect on tissues (lymphatic system; bone marrow) that produce those important blood factors.

Liver Tests (“liver function tests,” or “LFT’s”) → Measurement of enzymes produced in liver and released into the bloodstream when there is damage to the liver (listed as AST, ALT, LDH, GGT on the comprehensive metabolic laboratory report).

- Enzymes are proteins necessary for different body functions. Many factors can cause the release of enzymes into the blood, including certain diseases, obesity, alcohol use or abuse, and some medications (*e.g.* statin drugs; acetaminophen -Tylenol®). Other body tissues also contain these enzymes. Damage to those tissues (*e.g.* muscles; heart) can cause elevation in the blood. Slight elevations are not cause for alarm but may need evaluation.

Kidney Tests→ BUN (blood urea nitrogen) and Creatinine - breakdown products of proteins (body components or dietary) normally cleared through the kidneys (also in the comprehensive metabolic laboratory report).

- Damaged kidney cells cause a slowing of the process of clearing these from the blood. This leads to above-normal levels. Elevated BUN and/or Creatinine can also come from increased protein breakdown in the body (*e.g.* internal bleeding; muscle damage), and/or dehydration.

Urine Tests (urinalysis) → Tests for blood, protein, glucose (sugar), ketones (fat breakdown), leukocyte esterase/nitrites (indicators of urinary tract infection), urobilinogen (UBG - indicator of red blood cell breakdown and/or liver damage), and, optionally, a microscopic view to look for red or white blood cells.

- While unlikely to show effects from short-duration chemical exposures, urine can also be tested for specific substances such as mercury, or a benzene breakdown product (S-phenyl mercapturic acid—SPMA) or benzene itself.

Chest X-Ray → Views taken of chest organs (primarily lungs and heart).

- X-rays are examined for any effect from exposure that would show up as haziness or abnormal lines in the lung fields. Typically done on someone who is having breathing problems, has been found to have wheezes or other abnormal lung sounds on examination, or who hasn’t had a baseline done.

Pulmonary Function Test (PFTs) / Electrocardiogram (ECG; EKG)

- **Spirometry** is a breathing test in which you take a deep breath and blow all the air out of your lungs through a tube attached to a machine. This measures how completely and how rapidly you can exhale all the air from your lungs. This test is also typically be done on someone who is having breathing problems, has been found to have wheezes or other abnormal lung sounds on examination, or who hasn’t had a baseline done.
- PFTs provides information on whether there is constriction (narrowing) of the air tubes (bronchioles) leading to the air sacs in the depths of the lungs where oxygen and carbon dioxide are exchanged. Irritation or inflammation of the linings of those tubes causes difficulty getting air out of the lungs. This limits the amount of air that can enter the lungs on the next breath (similar to people with asthma).
- An **Electrocardiogram** (ECG; EKG) is the recording of the electrical activity of the heart. Done if there is an irregular heart rhythm or other cardiac signs or symptoms.