



## Just the Facts...

## Whole-body Vibration

<p><b>GENERAL INFORMATION</b></p>	<p>Whole-body Vibration (WBV) is often associated with vehicles. It can be experienced two ways; through an instantaneous shock with a high peak level (enough to jar you out of your seat) or through repeated exposure to low created by regular motion of a vehicle over rough terrain.</p> <p>Every object has a mass and a resonance frequency associated with it that excites the object when it experiences this frequency. Much like a bell when you ring it, the object continues to vibrate long after it has been struck. This vibration can cause damage to structures in the body. Most notably, vibrations between 2.5 and 5 Hz generate strong resonance in the vertebra of the neck and lumbar region. If the body experiences vibration between 4 and 6 Hz, this energy can manifest itself in the trunk with amplification (intensification) of up to 200%. Vibrations between 20 and 30 Hz can cause resonance between the head and shoulders. These situations can cause chronic musculoskeletal stress or even permanent damage to the effected region.</p> <p>The most common effect of WBV is lower back pain. Chronic WBV exposures may irritate spinal tissues. The resultant inflammation can contribute to degeneration of the intervertebral discs that can lead to functional impairment or structural changes such as nerve entrapment.</p>
<p><b>EXPOSURE IN DEPLOYED SETTING</b></p>	<p>Exposure to WBV may occur while riding in vehicles over rough terrain. Except in the case of jolt or shock, effects from vibration exposure will occur from repeated and prolonged exposure.</p>
<p><b>PERSONAL PROTECTIVE EQUIPMENT and - COUNTERMEASURES FOR DEPLOYED PERSONNEL</b></p>	<p>According to the American Conference of governmental Industrial Hygienists, WBV controls may include the use of “air-ride” suspended seats, suspended cabs, maintenance of vehicle suspension systems, proper tire inflation. Seats with armrests, lumbar support, an adjustable seat back, and an adjustable seat pan are also useful. The following good work practices may also be useful for workers operating vehicles; avoid lifting or bending immediately following exposure, use simple motions, with minimum rotation or twisting, when exiting a vehicle.</p>
<p><b>QUESTIONS TO ASK REGARDING EXPOSURE</b></p>	<ul style="list-style-type: none"> <li>• How frequently did individual come into direct contact with WBV?</li> <li>• What was the duration of the WBV contact?</li> <li>• Does individual have chronic effects that are possibly related to WBV exposure?</li> <li>• What is this relationship?</li> </ul>
<p><b>AVAILABLE EXPOSURE DATA</b></p>	<p><b>DATA IF AVAILABLE:</b> WBV has to be measured at the source with proper measurement equipment. If exposure data are not available, <b>ASK</b> questions concerning levels of, duration, frequency of exposure and equipment used while exposure to vibration occurred.</p>

<p><b>COMMON ACUTE AND CHRONIC HEALTH EFFECTS</b></p>	<p><u>Acute effects (short-term exposures):</u></p> <ul style="list-style-type: none"> <li>• Headache</li> <li>• Chest pain</li> <li>• Abdominal pain</li> <li>• Nausea</li> <li>• Loss of balance</li> </ul> <p><u>Chronic effects (long-term exposures):</u>  Most common effect of WBV is lower back pain. Long term exposure can lead to:</p> <ul style="list-style-type: none"> <li>• Degenerative spinal changes</li> <li>• Lumbar scoliosis</li> <li>• Disc disease</li> <li>• Degenerative disorders of the spine</li> <li>• Herniated discs</li> <li>• Disorders of the gastrointestinal system</li> </ul>
<p><b>REVERSIBILITY OF HEALTH EFFECTS</b></p>	<p>After stopping exposure to WBV, the acute effects WBV generally disappear. Exposed individuals generally feel much better soon after WBV exposure is stopped and they are moved to fresh air. The reversal of the effects of WBV exposure may take several hours to completely disappear based upon the severity and the length of time that the person was exposed. Early prevention through monitoring and early reporting of initial signs and symptoms can reduce chronic health effects.</p>
<p><b>TREATMENT REQUIRED/AVAILABLE FOR WBV EFFECTS</b></p>	<p>The immediate treatment for any WBV exposure is to stop the exposure (reduce exposure time, reduce intensity, isolate and control the source of vibration) when effects occur. For acute situations, symptomatic treatment is usually the mainstay of medical care. After emergent issues are taken care of, reducing the intensity or eliminating exposure altogether is the appropriate goal of the clinician.</p>
<p><b>LONG TERM MEDICAL SURVEILLANCE REQUIREMENTS OF HEALTH EFFECTS MONITORING</b></p>	<p>Persons chronically exposed to WBV should be periodically evaluated to determine if changes in exposure or health status have occurred. Reported findings of individuals should be compared to previous reports to determine if symptoms of WBV have increased. Avoidance or reduction of vibration exposure for persons who are symptomatic of vibration illnesses should be implemented.</p>
<p><b>SPECIAL RISK COMMUNICATION ISSUES</b></p>	<p>Most exposures to vibration result in acute conditions that readily reverse with prevention of contact and appropriate treatment.  In cases where exposure resulted in chronic effects, medical surveillance, treatment and planned follow-up are necessary.</p>