

therefore concluded that wet methods should not be required during such removals. OSHA further concludes that employers should not be forced to choose between wet methods and respirators because such a choice would undoubtedly lead to use of wet methods in many cases and, even where respirators are selected, roofing workers would be exposed to increased safety hazards. Accordingly, paragraph (h)(1)(iii) is being corrected to provide that even when wet methods are not used on sloped roofs, respirators need not be worn when a negative exposure assessment has been made and the ACM is removed in an intact state.

*(c) Lowering Removed Material to the Ground*

Once asbestos-containing roofing material has been separated from the roof, it must be lowered to the ground for disposal. Proper handling of the material, both on the roof and on the ground, is needed to reduce the release of asbestos fibers. Even when the material is intact, the large quantity of material that must be moved from the roof to the ground during a Class II roof removal job dictates that care be used in the disposal operation. And when material is non-intact, the potential for release of large numbers of asbestos fibers during disposal operations requires additional precautions.

As originally written, paragraph (g)(8)(ii)(E) required that any ACM removed from a roof either be immediately lowered to the ground via covered, dust-tight chute, crane or hoist, or else be placed in an impermeable waste bag or wrapped in plastic sheeting and lowered to the ground no later than the end of the work shift. By oversight, no distinction was made between intact and non-intact material. To correct this oversight, OSHA is clarifying the wrapping or bagging requirement of paragraph (g)(8)(ii)(E) in the case of intact roofing material. As long as the material is lowered to the ground no later than the end of the work shift, the employer is no longer required to wrap or bag intact material while the material remains on the roof. Wrapping or bagging of intact material is inappropriate for two reasons. First, wrapping or bagging requires additional handling of the material and could increase the likelihood of asbestos fiber release, particularly in the case of large sections of built-up roofing, which can be difficult to wrap or bag. Second, wrapping or bagging increases the time required for the job and would thereby increase the time during which workers are exposed to the safety hazards associated with roofing work. OSHA

believes that, when ACM that has been removed from a roof is intact, there is little potential for fiber release if the material remains undisturbed on the roof for a short time.

For non-intact material, however, the potential for significant fiber release requires some means of protection if the material is not immediately lowered to the ground. To minimize fiber release from non-intact material while it remains on the roof, paragraph (g)(8)(ii)(E) requires that such material either be kept wet, wrapped, or bagged if the material is not immediately lowered to the ground. The option to keep the material wet was not available under the original version of the standard. However, keeping the material wet will minimize fiber release and will avoid the need the additional handling required when the material is wrapped or bagged. Although wetting may sometimes not be feasible, there is no reason not to allow its use as an alternative to wrapping or bagging in those situations where it is feasible.

As corrected, paragraph (g)(8)(ii)(E) allows material to be carried or passed to the ground by hand as an alternative to being lowered by means of a dust-tight chute, crane or hoist. This gives employers additional flexibility in situations where manual lowering is feasible. For example, some roofing jobs may involve removal of amounts of ACM sufficiently small that the most feasible method of lowering the material to the ground may be to have it carried off the roof by a worker. Also, where the roof is not too high off the ground, it may be feasible to pass the material to the ground from hand to hand. As long as the material is not dropped or thrown to the ground, OSHA does not wish to prohibit use of lowering methods that do not give rise to the potential for significant fiber release.

Two technical amendments dealing with disposal of asbestos-containing roofing material are also being made. Paragraph (l)(2), the general provision for disposing of asbestos waste, is being corrected to state explicitly that the specific requirements for disposal of roofing waste in paragraph (g)(8)(ii) apply in lieu of the general requirement of paragraph (l)(2). And paragraph (g)(1)(iii), which generally requires prompt clean-up and disposal of asbestos waste and debris in leak-tight containers, is similarly being corrected to state that the specific provisions for clean-up and disposal of roofing waste in paragraph (g)(8)(ii) are exclusive. Thus, disposal of roofing waste is governed exclusively by paragraph (g)(8)(ii)(E), which has been discussed above, and paragraph (g)(8)(ii)(F), which

requires that once roofing material has been lowered to the ground, unwrapped material shall be transferred to a closed receptacle in a manner that will preclude the dispersion of dust.

*(d) Cleanup of Dust and Debris*

The standard contains several requirements aimed at assuring that asbestos-containing dust and debris are cleaned up in a manner that minimizes worker exposure. Paragraph (g)(1)(i) requires that HEPA vacuums be used to collect all dust and debris containing ACM or PACM. The general provision for use of wet methods in paragraph (g)(1)(ii) applies during cleanup operations. And dry sweeping, shoveling, or other dry clean-up methods are prohibited by paragraph (g)(3)(iii).

When a roof is to be removed, there is often dust and debris on the roof that has resulted from the roof's exposure to the elements over a long period of time. The standard does not require HEPA vacuuming of such general environmental contamination before roof removal work begins or during such work. HEPA vacuuming of dust and debris is only required if there is an indication that non-intact ACM is the source of the dust and debris. Similarly, if a roofing contractor does clean up environmental dust and debris that is not associated with non-intact ACM before or during a roof removal job, the standard's prohibition on use of dry clean-up methods does not apply.

When a power roof cutter is used to remove built-up roofing, the dust resulting from the cut is non-intact ACM, and the standard requires that the dust be thoroughly and appropriately cleaned up. Rather than requiring that such dust always be HEPA vacuumed, paragraph (g)(8)(ii)(D) is being corrected to give employers additional flexibility when the dust can be removed by other means that prevent it from becoming airborne. When built-up roofing is removed from a smooth-surface roof (i.e., a non-aggregate built-up roof), paragraph (g)(8)(ii)(D) now permits employers, as an alternative to HEPA vacuuming, to gently sweep and then carefully and thoroughly wipe up the still-wet dust and debris generated by the roof cutter and left along the cut line. As long as the dust is completely wiped up while it is wet, this method will assure that the dust is disposed of without becoming airborne. However, where the built-up roofing has an aggregate surface, sweeping and wiping of the dust generated by the roof cutter is not an effective alternative because some dust will remain in the cracks and crevasses of the aggregate surface.