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A Review of Depleted Uranium Biological Effects: In Vitro and In Vivo Studies

Alexandra C. Miller, / David McClain,

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A Review of Depleted Uranium Biological Effects: In Vitro and In Vivo Studies

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Summary: The use of depleted uranium in armor-penetrating munitions remains a source of controversy because of the numerous unanswered questions about its long-term health effects. Although no conclusive epidemiologic data have correlated DU exposure to specific health effects, studies using cultured cells and laboratory rodents continue to suggest the possibility of leukemogenic, genetic, reproductive, and neurological effects from chronic exposure. Until issues of concern are resolved with further research, the use of depleted uranium by the military will continue to be controversial.

Keywords: toxicity, health effects, carcinogenicity

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INTRODUCTION

Advances in metallurgy and weapons design in the past several decades have led to new munitions

whose effectiveness has provided tactical advantages on the battlefield, consequently, decreasing the number of United States (US) casualties. Yet, decisions to deploy such munitions have sometimes outpaced our knowledge of how they affect the health of those exposed to them.

Depleted uranium (DU) kinetic energy penetrators are perhaps the best-known examples of the advanced munitions, primarily because of their outstanding, well-publicized performance against enemy armor in the 1991 Persian Gulf War. Depleted uranium munitions were again used in the NATO military actions in Bosnia-Herzegovina (1995), in Kosovo (1999), and, more recently, in coalition actions in Iraq.

Although DU munitions were used only by coalition forces during the 1991 Gulf War, their use also led to DU-fragment injuries among their own forces resulting from friendly fire incidents. Other personnel were exposed via inhalation/ingestion after working around vehicles struck by DU munitions. Such exposures were not considered especially dangerous at the time, because epidemiologic studies of uranium miners and millers

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