

Why GAO Did This Study

DOD depends on rare earths that contain one or more of 17 similar metals which have unique properties, such as magnetism at high temperatures, to provide functionality in weapon system components. Many steps in the rare earths supply chain, such as mining, are conducted in China, a situation that may pose risks to the continued availability of these materials. The Joint Explanatory Statement accompanying the Carl Levin and Howard P. “Buck” McKeon National Defense Authorization Act for 2015 included a provision for GAO to review DOD efforts to identify and mitigate risks in its rare earths supply chain.

This report assesses the extent that DOD (1) determined which rare earths, if any, are critical to national security; and (2) has identified and mitigated risks associated with rare earths, including the effects of a potential supply disruption. GAO reviewed DOD reports from 2011-2015 and relevant legislation; and collected information from DOD, the military departments, and industry organizations.

What GAO Recommends

GAO recommends that DOD designate which rare earths are critical to national security, and develop a comprehensive approach to help ensure a secure supply by identifying risk metrics, among other activities. DOD concurred with all the recommendations in this report and provided timeframes for action.

View [GAO-16-161](#). For more information, contact Marie A. Mak at (202) 512-4841 or makm@gao.gov.

RARE EARTH MATERIALS

Developing a Comprehensive Approach Could Help DOD Better Manage National Security Risks in the Supply Chain

What GAO Found

Three Department of Defense (DOD) offices have identified certain rare earth materials (rare earths) as critical for some defense applications, such as lasers, but DOD has not taken a comprehensive, department-wide approach to identifying which rare earths, if any, are critical to national security. Specifically, DOD offices have not yet agreed on what constitutes “critical” rare earths. Using different statutorily-based definitions, these offices have identified 15 of the 17 rare earths as critical over the last 5 years (see table).

Rare Earth Materials (Rare Earths) Meeting Various Definitions of Critical by Office			
Rare earths	Acquisition, Technology and Logistics	Manufacturing and Industrial Base Policy (MIBP) ^a	Defense Logistics Agency-Strategic Materials
	2012	2013	2011, 2013, 2015
Scandium			●
Yttrium	●	●	●
Lanthanum			●
Praseodymium	●		●
Neodymium	●		●
Samarium			●
Europium	●		●
Gadolinium	●		
Terbium		●	●
Dysprosium	●	●	●
Holmium		●	
Erbium	●	●	●
Thulium		●	●
Ytterbium		●	
Lutetium		●	

Source: GAO presentation of Department of Defense reports. | GAO-16-161

Notes: Two rare earths, cerium and promethium, were not identified as critical. The rare earths are an International Union of Pure and Applied Chemistry named group.

^aMIBP identified these rare earths as higher risk.

DOD’s current approach to identifying and mitigating risks associated with rare earths is fragmented. With different interpretations of which rare earths are critical, establishing priorities to analyze supply risk becomes difficult. For example, the Defense Logistics Agency-Strategic Materials office methodically analyzes risks for all materials, but its focus is a four-year timeframe with stockpiling as its mitigation tool. The Manufacturing and Industrial Base Policy office relies on other DOD organizations to identify and elevate risks, relies primarily on the market to resolve supply disruptions, and has not put in place measures to evaluate the success of its mitigating actions. According to DOD, supply disruptions in rare earths have not occurred over the last several years. Regardless, the Strategic Materials Protection Board has not developed a comprehensive approach for ensuring a sufficient supply of rare earths for national security needs—one that can establish criticality, assess supply risks, and identify mitigating actions. Such an approach would better position DOD to help ensure continued functionality in weapon system components should a disruption occur.