



Market  
Research.com

Knowledge. Identified & Delivered.

# MarketsandMarkets

<http://www.marketresearch.com/MarketsandMarkets-v3719/>

## Publisher Sample

Phone: **800.298.5699** (US) or **+1.240.747.3093** or **+1.240.747.3093** (Int'l)

Hours: Monday - Thursday: 5:30am - 6:30pm EST

Fridays: 5:30am - 5:30pm EST

Email: [customerservice@marketresearch.com](mailto:customerservice@marketresearch.com)  
MarketResearch.com

## **RADIATION DETECTION, MONITORING & SAFETY MARKET**

For Nuclear Power Plants, Homeland Security & Defense,  
Manufacturing Industry (Geiger Counter, Scintillator, Dosimeter,  
Area Process, Survey Meter, Portal Monitors)

## **TRENDS & GLOBAL FORECASTS TO 2020**



**MARKETSANDMARKETS**

***It's all about markets***

**MARKETSANDMARKETS**

[sales@marketsandmarkets.com](mailto:sales@marketsandmarkets.com)

[www.marketsandmarkets.com](http://www.marketsandmarkets.com)

MarketsandMarkets is a global market research and consulting company based in the U.S. We publish strategically analyzed market research reports and serve as a business intelligence partner to Fortune 500 companies across the world. MarketsandMarkets also provides multi-client reports, company profiles, databases, and custom research services.

MarketsandMarkets covers fourteen industry verticals, including aerospace and defence, advanced materials, automotives and transportation, banking and financial services, biotechnology, chemicals, consumer goods, energy and power, food and beverages, industrial automation, medical devices, pharmaceuticals, semiconductor and electronics, and telecommunications and IT.

Copyright © 2015 MarketsandMarkets

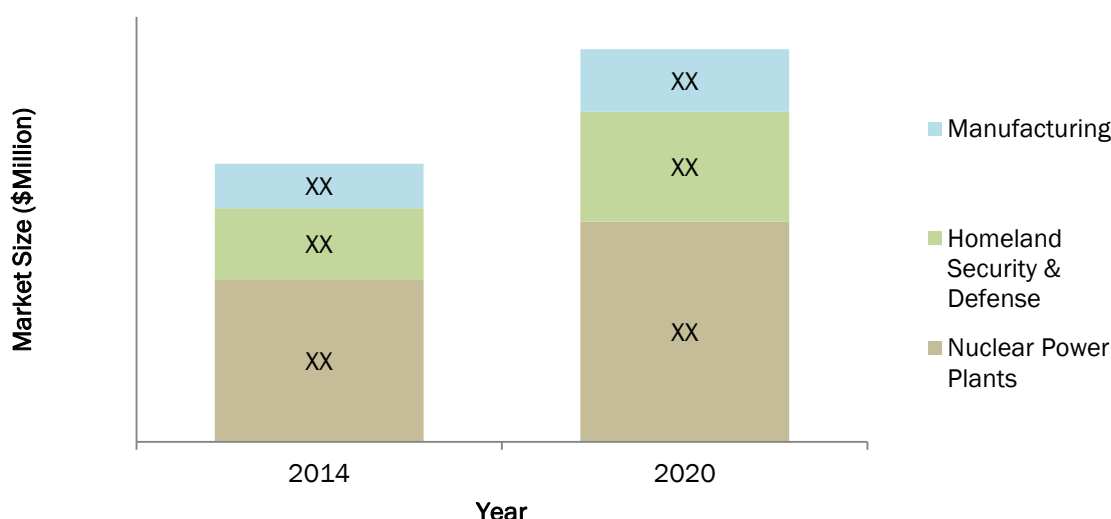
All Rights Reserved. This document contains highly confidential information and is the sole property of MarketsandMarkets. No part of it may be circulated, copied, quoted, or otherwise reproduced without the approval of MarketsandMarkets.

## 1 EXECUTIVE SUMMARY

The radiation detection, monitoring, and safety market is witnessing significant transformation with the changing landscape of nuclear power plants, homeland security and defense, and manufacturing industries. The growth of this market is majorly influenced by the dynamics of these industries. Global interest in the nuclear energy industry and its applications has led to an increase in the number of nuclear power plants. Increasing nuclear threat or nuclear terrorism and growing focus of governments on usage of radiation detection and safety instruments is driving the nuclear power plants and homeland security and defense market. Increased incorporation of radioactive compounds in various consumer products such as nuclear medicines, radio luminous products, and fluorescent lamp starters is a pivotal factor propelling the demand for radiation detection, monitoring, and safety equipment for the manufacturing industry. However, due to the after effects of the Fukushima disaster the nuclear power plants industry is facing challenges. All the nuclear reactors in Japan were either temporarily or permanently shut down. Similarly, the number of power plants in the European countries declined in response to the Fukushima disaster, and there was a significant reduction in grant funding by the Department of Homeland Security (DHS) in North America.

The nuclear power plants industry is the largest in terms of market value, followed by homeland security and defense industry, and the manufacturing industry. The homeland security and defense industry is the fastest-growing segment of the radiation detection, monitoring, and safety market, owing to the increasing terrorist threats across the globe, augmented government expenditure on internal security, and increasing awareness regarding the need for security. In 2014, the global radiation detection, monitoring, and safety market for nuclear power plants, homeland security and defense, and manufacturing industry were valued at \$XX million, \$XX million, and \$XX million, respectively.

**FIGURE 1** GLOBAL RADIATION DETECTION, MONITORING, AND SAFETY MARKET SIZE, BY INDUSTRY, 2014 (\$MILLION)

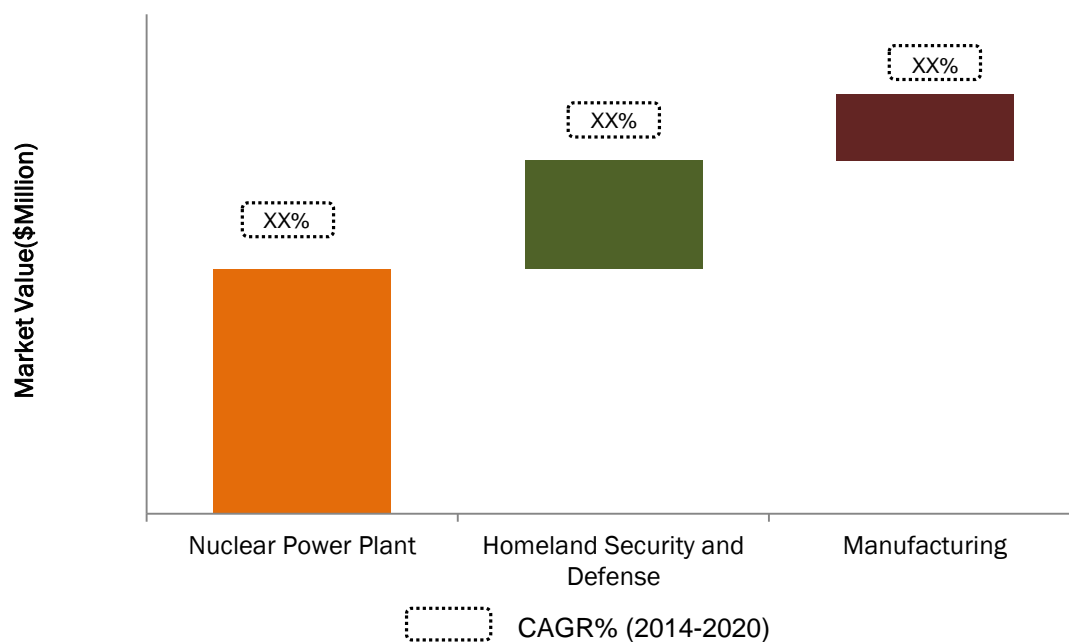


Source: Annual Reports, SEC Filings, Press Releases, Investor Presentations, International Radiation Protection Association (IPRA), Health Physics Society (HPS), Expert Interviews, and MarketsandMarkets Analysis

## 2 PREMIUM INSIGHTS

### 2.1 NUCLEAR POWER PLANT INDUSTRY THE LARGEST SEGMENT IN THE RADIATION DETECTION MONITORING AND SAFETY MARKET

**FIGURE 2** HOMELAND SECURITY AND DEFENSE THE FASTEST GROWING SEGMENT IN THE RADIATION DETECTION, MONITORING AND SAFETY MARKET



Source: Annual Reports, SEC Filings, Press Releases, Investor Presentations, National Council on Radiation Protection & Measurements (NCRP), International Radiation Protection Association (IPRA), Health Physics Society (HPS), Expert Interviews, and MarketsandMarkets Analysis

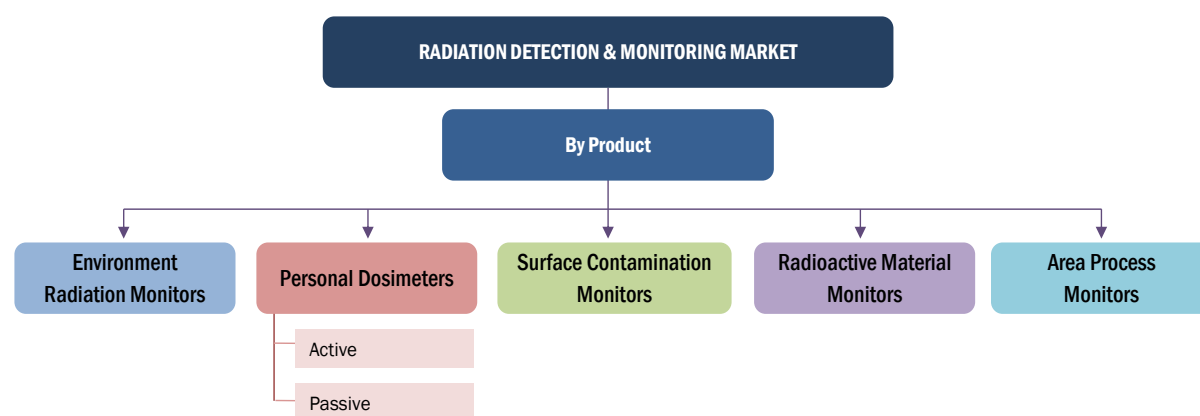
### 3 MARKET OVERVIEW

#### 3.1 MARKET SEGMENTATION

##### 3.1.1 RADIATION DETECTION AND MONITORING MARKET FOR NUCLEAR POWER PLANTS, BY PRODUCT

Radiation detection and monitoring instruments identify and measure ionizing radiations in individuals and the environment. Radiation detection and monitoring devices for nuclear power plants are classified as personal dosimeters, area process meters, environment radiation monitors, surface contamination monitors, and radioactive material monitors.

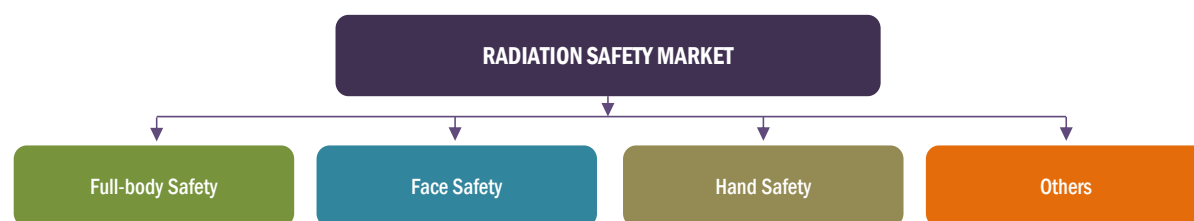
**FIGURE 3** RADIATION DETECTION AND MONITORING MARKET FOR NUCLEAR POWER PLANTS, BY PRODUCT



Source: Annual Reports, SEC Filings, Press Releases, Investor Presentations, National Council on Radiation Protection & Measurements (NCRP), International Radiation Protection Association (IPRA), Health Physics Society (HPS), Expert Interviews, and MarketsandMarkets Analysis

##### 3.1.2 RADIATION SAFETY MARKET FOR NUCLEAR POWER PLANTS, BY PRODUCT

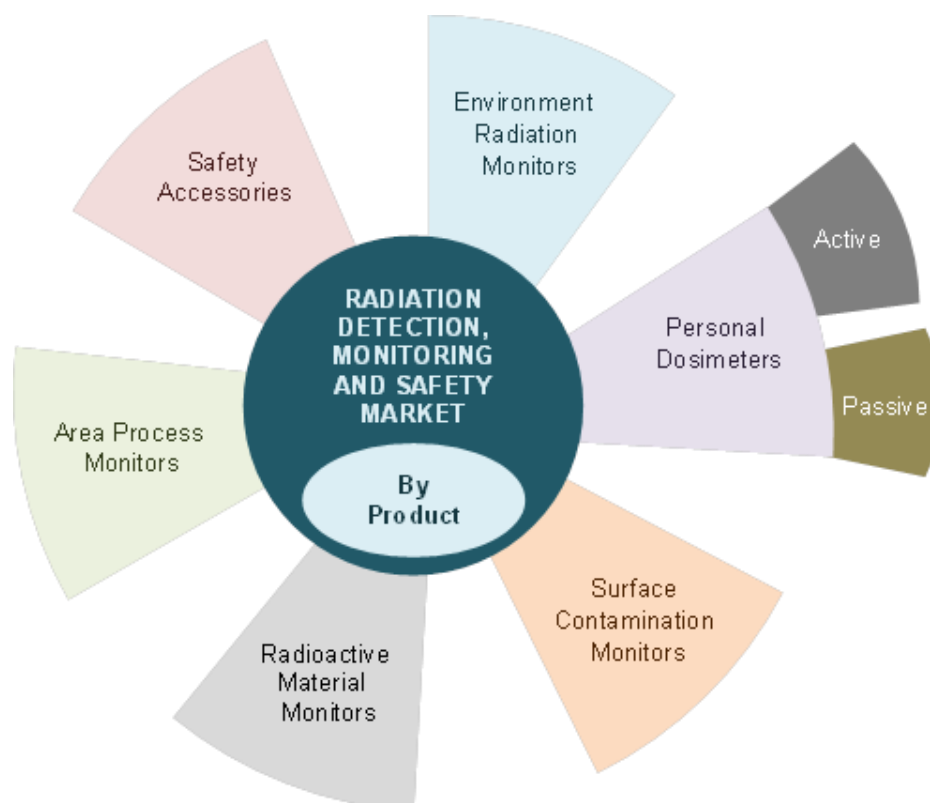
Nuclear power plants emit a variety of nuclear radiations, the main types being alpha particles, beta particles, gamma rays, X-rays, and neutrons. These ionizing radiations are harmful as they are capable of damaging living tissues. Hence, the safety of workers at nuclear power plants is of the utmost significance. In this respect, workers are expected to wear the appropriate clothing and dosimetry when they enter a controlled area, depending on requirement. They are also required to monitor their dosimetry levels, which indicate how much radiation they may have been exposed to, while leaving the controlled area. Workers are also provided protective gear such as lead aprons, eyewear, masks, and shielding.

**FIGURE 4 RADIATION SAFETY MARKET FOR NUCLEAR POWER PLANTS SEGMENTATION**

Source: Annual Reports, SEC Filings, Press Releases, Investor Presentations, National Council on Radiation Protection & Measurements (NCRP), International Radiation Protection Association (IPRA), Health Physics Society (HPS), Expert Interviews, and MarketsandMarkets Analysis

### 3.1.3 RADIATION DETECTION, MONITORING, AND SAFETY MARKET FOR MANUFACTURING INDUSTRY, BY PRODUCT

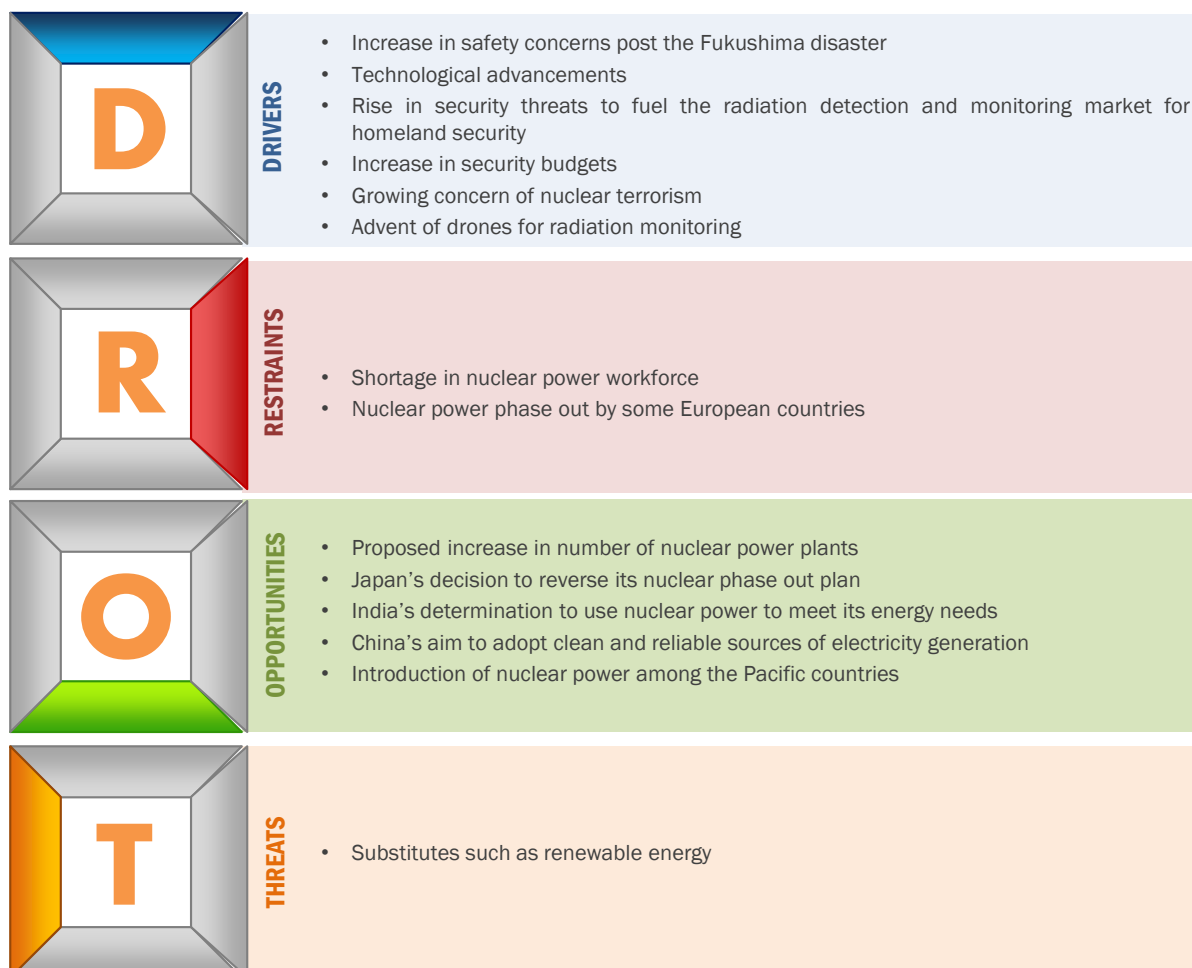
Radiation detection and monitoring instruments identify and measure ionizing radiations in individuals as well as the environment. Radiation detection and monitoring devices for the manufacturing industry are classified into area process monitors, environment radiation monitors, surface contamination monitors, personal dosimeters, and radioactive material monitors. Personal dosimeters or dosimeters, used by individuals to quantify radiation levels, are the most widely used monitoring devices in manufacturing facilities.

**FIGURE 5 MARKET SEGMENTATION, BY PRODUCT**

Source: Company Websites, Annual Reports, SEC Filings, Press Releases, Investor Presentations, National Council on Radiation Protection & Measurements (NCRP), International Radiation Protection Association (IPRA), Health Physics Society (HPS), Expert Interviews, and MarketsandMarkets Analysis

## 3.2 MARKET DYNAMICS

The market growth is mainly driven by paramount concern for safety in wake of the Fukushima disaster, technological advancements, increase in security threats, and rising number of nuclear power plants in emerging nations. However, pivotal factors restraining the growth of this market are shortage of nuclear power workforce, and the decision to phase out nuclear power by some European countries. Furthermore, the availability and growing popularity of renewable energy alternatives pose as a major threat for the market.



Source: Annual Reports, SEC Filings, Press Releases, Investor Presentations, World Nuclear Association (WNA), International Radiation Protection Association (IPRA), Expert Interviews, and MarketsandMarkets Analysis

### 3.2.1 DRIVERS

#### 3.2.1.1 Increase in concerns for safety post the Fukushima disaster

The International Atomic Energy Agency (IAEA) has been working extensively towards nuclear safety post the Fukushima disaster. There are increased concerns regarding the safety of radiation professionals and workers. Various member states such as the U.K., the U.S., Venezuela, Vietnam, France, Germany, India, Indonesia, and Israel have adopted IAEA's safety standards in their national regulations. The IAEA standards are practiced by designers, manufacturers, and operators across the globe to improve nuclear and radiation safety in nuclear power plants. Currently, all member states with nuclear power plants have completed stress tests and taken required steps to enhance safety measures. The IAEA also offered training to the member states on steps to be taken in an emergency situation at a nuclear power plant. In



this regard, it developed a publication that provides practical tools for those involved in emergency response to protect the public in case of a severe emergency at a nuclear power plant.

Various governments and private organizations such as Health Canada, National Council on Radiation Protection & Measurements (NCRP), Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), Conference of Radiation Control Program Directors (CRCPD), and United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) have incorporated guidelines and protocols regarding radiation protection among radiation professionals. Worker safety at nuclear plants is also being promoted by several federal agencies, such as the Environmental Protection Agency and the U.S. Departments of Energy and Transportation.

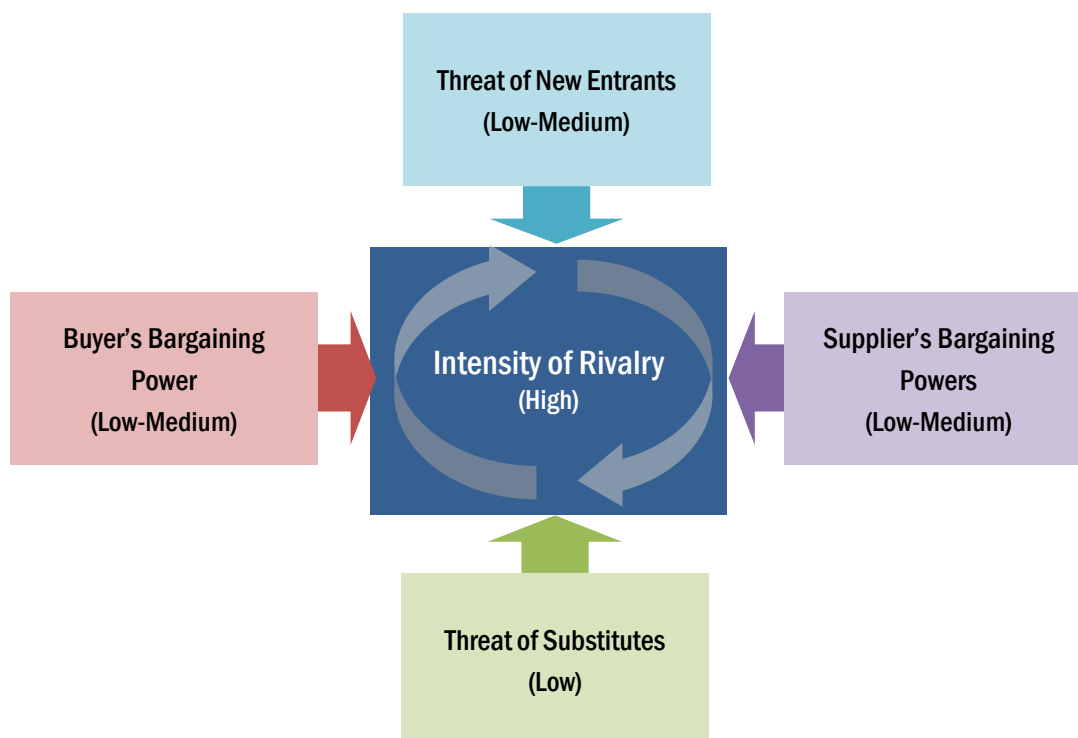
### 3.3 INDUSTRY INSIGHTS

This segment of the report studies the market through Porter's five forces and supply chain analyses, whilst throwing light upon the impacts of these analyses on the radiation detection, safety, and monitoring market environment.

### 3.4 PORTER'S FIVE FORCES ANALYSIS

The competitive environment prevailing in the global radiation detection, monitoring, and safety industry can be analyzed through Porter's Five Forces analytical framework.

**FIGURE 6** PORTER'S FIVE FORCES ANALYSIS: GLOBAL RADIATION DETECTION, MONITORING, AND SAFETY MARKET



Source: Annual Reports, SEC Filings, Press Releases, Investor Presentations, National Council on Radiation Protection & Measurements (NCRP), International Radiation Protection Association (IPRA), Health Physics Society (HPS), Expert Interviews, and MarketsandMarkets Analysis

## 4 RADIATION DETECTION, MONITORING, AND SAFETY MARKET FOR THE MANUFACTURING INDUSTRY, BY SEGMENT

### 4.1 INTRODUCTION

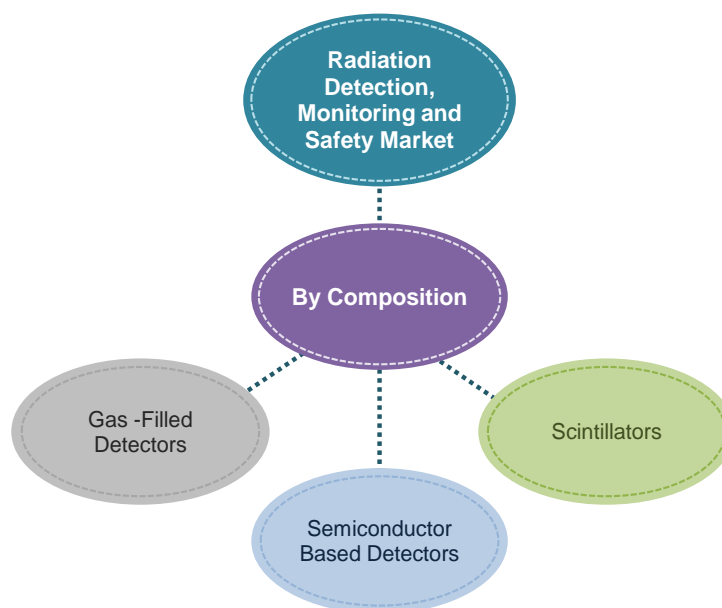
Over the past few years, the incorporation of radioactive compounds in various consumer products has increased significantly. Consumer products that contain radionuclides include nuclear medicines, radioluminous products, fluorescent lamp starters, anti-static devices, electronic products, thoriated lenses, glassware, tableware, jewelry, ceramic tiles, lightning preventers, and dental products. Radiation is also used in certain manufacturing processes such as gemstone manufacturing (irradiation by neutron or electron beam radiation to enhance color).

In the manufacturing process of products that contain radionuclides, workers and other personnel are exposed to unwanted ionizing radiations, which can cause health problems. However, owing to increasing awareness and technological advancements, the usage of radiation detection, monitoring, and safety equipment has increased significantly over the past few years. A number of governments and several national and international organizations have issued directives and guidelines that ensure radiation safety in the manufacturing industry. For instance, in New Zealand, the Radiation Protection Act 1965 mandates that prior authorization is needed to manufacture consumer products that contain radionuclides.

### 4.2 RADIATION DETECTION, MONITORING, AND SAFETY MARKET FOR MANUFACTURING INDUSTRY, BY COMPOSITION

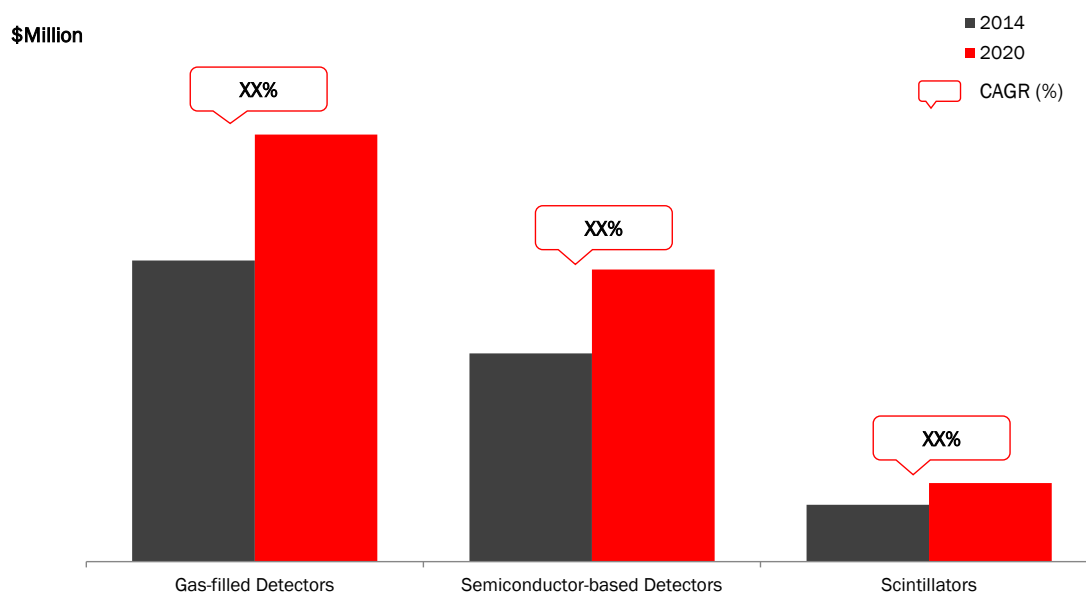
Based on the type of composition, radiation detectors are categorized as gas-filled detectors, semiconductor-based detectors, and scintillators. Gas-filled detectors include ionization chambers, proportional counters, and Geiger-Mueller counters. Scintillators include organic and inorganic scintillation detectors.

**FIGURE 7** MARKET SEGMENTATION, BY COMPOSITION



Source: Annual Reports, SEC Filings, Press Releases, Investor Presentations, National Council on Radiation Protection & Measurements (NCRP), International Radiation Protection Association (IPRA), Health Physics Society (HPS), Expert Interviews, and MarketsandMarkets Analysis

**FIGURE 8** GAS-FILLED DETECTORS DOMINATE THE RADIATION DETECTION, MONITORING, AND SAFETY MARKET FOR MANUFACTURING INDUSTRY



Source: Annual Reports, SEC Filings, Press Releases, Investor Presentations, National Council on Radiation Protection & Measurements (NCRP), International Radiation Protection Association (IPRA), Health Physics Society (HPS), Expert Interviews, and MarketsandMarkets Analysis

**TABLE 1** GLOBAL RADIATION DETECTION, MONITORING, AND SAFETY MARKET SIZE FOR MANUFACTURING INDUSTRY, BY COMPOSITION, 2012–2020 (\$MILLION)

Composition	2012	2013	2014	2020	CAGR% (2014–2020)
Gas-filled Detectors	XX	XX	XX	XX	XX
Scintillators	XX	XX	XX	XX	XX
Semiconductor-based Detectors	XX	XX	XX	XX	XX
<b>Total</b>	XX	XX	XX	XX	XX

Source: Annual Reports, SEC Filings, Press Releases, Investor Presentations, National Council on Radiation Protection & Measurements (NCRP), International Radiation Protection Association (IPRA), Health Physics Society (HPS), Expert Interviews, and MarketsandMarkets Analysis

The market is primarily driven by gas filled-detectors. These detectors offer a favorable performance-to-cost ratio and are hence preferred over other types of detectors. The gas-filled detectors market is valued at an estimated \$XX million in 2014 and is poised to reach \$XX million by 2020, at an estimated CAGR of XX% from 2014 to 2020.

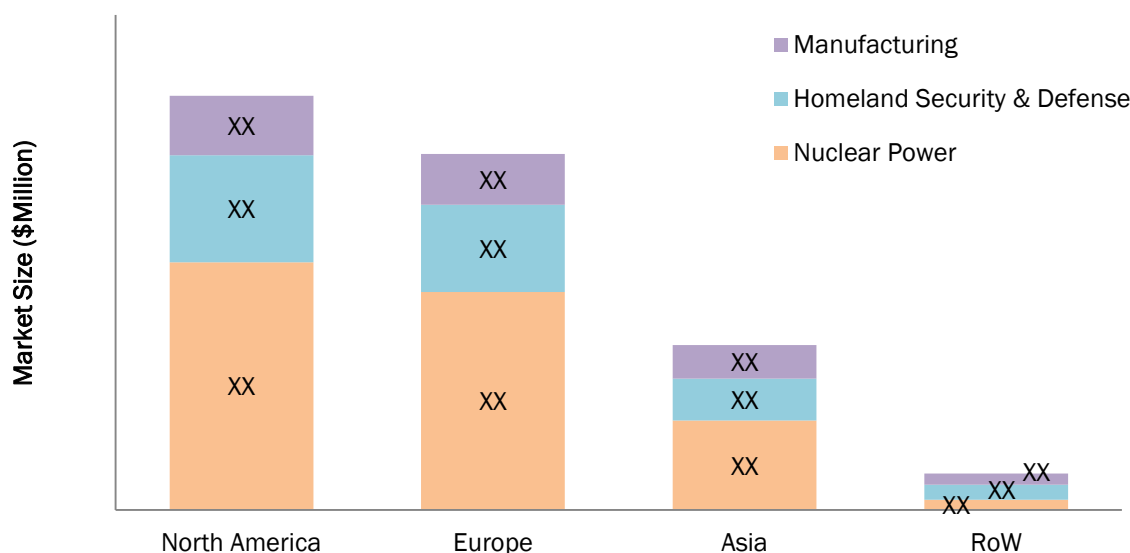
## 5 GEOGRAPHIC ANALYSIS

### 5.1 INTRODUCTION

Growth of the global radiation detection, monitoring, and safety market is driven by numerous factors. Due to increased focus on nuclear energy, there has been a rise in the number of nuclear power plants. The growing threat of nuclear terrorism and increasing focus of governments on the use of radiation detection and safety instruments is driving the nuclear power plants and homeland security and defense markets. Moreover, radioactive compounds are increasingly being used in various consumer products such as nuclear medicines, radioluminous products, and fluorescent lamp starters. This is another major factor propelling the demand for radiation protection equipment.

The global radiation detection, monitoring, and safety market for nuclear power plants, homeland security and defense, and manufacturing industry is divided into four major geographies, namely, North America, Europe, Asia, and the Rest of the World (RoW).

**FIGURE 9** GLOBAL RADIATION DETECTION, MONITORING, AND SAFETY MARKET, BY INDUSTRY, 2014 (\$MILLION)



Source: Annual Reports, SEC Filings, Press Releases, Investor Presentations, National Council on Radiation Protection & Measurements (NCRP), International Radiation Protection Association (IPRA), Health Physics Society (HPS), Expert Interviews, and MarketsandMarkets Analysis

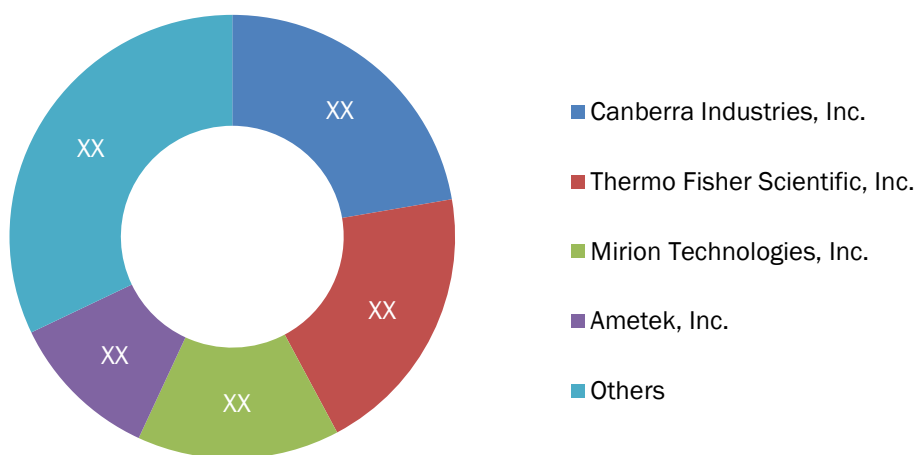
In 2014, the global radiation detection, monitoring, and safety market for nuclear power plants, homeland security and defense, and manufacturing industry is valued at an estimated \$XX million, \$XX million, and \$XX million, respectively. Across all the three industries covered, North America is the largest market, followed by Europe and Asia. However, the Asian region is expected to witness the highest growth in all the three industrial segments. This high growth can be attributed to the rising demand for radiation detection and monitoring instruments in China, South Korea, and India, owing to the expected growth in nuclear power generation (between 2015 and 2030) in these countries. Moreover, in the coming years, China is expected to increase its expenditure in the homeland security sector.

## 6 COMPETITIVE LANDSCAPE

### 6.1 MARKET SHARE ANALYSIS

#### 6.1.1 RADIATION DETECTION, MONITORING, & SAFETY MARKET FOR NUCLEAR POWER PLANTS, BY KEY PLAYER

**FIGURE 10** RADIATION DETECTION, MONITORING, & SAFETY MARKET FOR NUCLEAR POWER PLANTS: MARKET SHARE ANALYSIS, BY KEY PLAYER, 2014



Note: Others include Landauer, Inc., Ludlum Measurements, Atomtex SPE (Republic of Belarus), General Electric Measurement and Solutions (U.S.), LND, Inc. (U.S.), S.E. International (U.S.), and Radiation Monitoring Devices, Inc.

Source: Annual Reports, SEC Filings, Press Releases, Investor Presentations, National Council on Radiation Protection & Measurements (NCRP), International Radiation Protection Association (IPRA), Health Physics Society (HPS), Expert Interviews, and MarketsandMarkets Analysis

In 2014, the radiation detection, monitoring, and safety market for nuclear power plants is expected to be dominated by Canberra Industries, Inc. and Thermo Fisher Scientific, Inc. with shares of XX% and XX%, respectively.

Canberra Industries, Inc. (U.S.), a subsidiary of Areva Company, is a leading player in the radiation protection market for nuclear power plants. The firm has been in the market for more than four decades and offers a diversified product portfolio. Its environment and radiation monitoring systems business offers a variety of nuclear safety measurement equipment such as personal radiation monitors (Radiagem 2000/4000 Personal Portable Dose Rate and Survey Meter), transportable contamination monitors, dosimetry systems, liquid and process monitors, and military radiacs. The firm's leading position is attributed to its wide geographic presence spanning Africa, Asia, Europe, Latin America, Middle East, North America, and Oceania. The subsidiaries of the company include Canberra UK Limited, CANBERRA France, ZAO CANBERRA Packard Trading Corporation (CPTC) (Russia), CANBERRA Solutions AB (Sweden), CANBERRA Co., (Canada), CANBERRA GmbH (Germany), Canberra Benelux NV (Belgium), Canberra Packard Ltd (Ukraine), and Canberra Dover Inc. (U.S.).

In order to sustain its leading position in the market, Canberra primarily follows the organic growth strategy of launching new products in the market. For instance, in 2014, Canberra launched VLD solutions which are capable of detecting very low doses of radiation. This device is equipped with a large color touch screen and reports the data in real time.

**Disclaimer:** MarketsandMarkets strategic analysis services are limited publications containing valuable market information provided to a select group of customers in response to orders. Our customers acknowledge, when ordering, that MarketsandMarkets strategic analysis services are for our customers' internal use and not for general publication or disclosure to third parties. Quantitative market information is based primarily on interviews and therefore, is subject to fluctuation.

MarketsandMarkets does not endorse any vendor, product or service depicted in its research publications. MarketsandMarkets strategic analysis publications consist of the opinions of MarketsandMarkets' research and should not be construed as statements of fact. MarketsandMarkets disclaims all warranties, expressed or implied, with respect to this research, including any warranties of merchantability or fitness for a particular purpose.

MarketsandMarkets takes no responsibility for any incorrect information supplied to us by manufacturers or users.

All trademarks, copyrights and other forms of intellectual property belong to their respective owners and may be protected by copyright. Under no circumstance may any of these be reproduced in any form without the prior written agreement of their owner.

No part of this strategic analysis service may be given, lent, resold or disclosed to non-customers without written permission.

Reproduction and/or transmission in any form and by any means including photocopying, mechanical, electronic, recording or otherwise, without the permission of the publisher is prohibited.