# Dossier: H3D INC

## SBIR Award Details

**Award Title:** N/A

**Amount:** $174,000.00

**Award Date:** 2023-06-12

**Branch:** DTRA

## AI-Generated Intelligence Summary

**Company Overview:**

H3D, Inc. is a technology company specializing in advanced radiation detection and imaging solutions for various applications, including nuclear security, medical imaging, and research. Their core mission is to develop high-resolution, compact, and cost-effective radiation detectors that provide improved performance compared to traditional technologies. They aim to solve the critical problems of accurately identifying and localizing radioactive sources in complex environments, enhancing threat detection capabilities, and improving medical diagnostic accuracy. Their unique value proposition lies in their innovative use of cadmium zinc telluride (CZT) crystal technology and sophisticated algorithms to create gamma-ray spectrometers with superior energy resolution and 3D imaging capabilities in a relatively small form factor. This allows for more precise identification and mapping of radioactive materials, aiding in border security, nuclear material tracking, and advanced medical imaging modalities.

**Technology Focus:**

* CZT-based Gamma-Ray Spectrometers: H3D's primary technology involves developing high-resolution gamma-ray spectrometers utilizing cadmium zinc telluride (CZT) crystals. These spectrometers offer significantly improved energy resolution (around 0.8% FWHM at 662 keV) compared to traditional detectors, enabling more accurate identification of radioactive isotopes.
* 3D Imaging & Localization: H3D systems can reconstruct 3D images of gamma-ray emitting sources. This ability to pinpoint the spatial location of radioactive materials is crucial for applications such as nuclear security and medical imaging, providing actionable intelligence for source localization and threat assessment.

**Recent Developments & Traction:**

* April 2024: H3D announced the deployment of its Polaris H spectrometers to assist in dismantling the defunct Chernobyl Nuclear Power Plant, contributing to the detection and quantification of radioactive materials within the facility.
* September 2022: Received a $1.6 million Phase II Small Business Innovation Research (SBIR) grant from the Department of Energy (DOE) to continue developing its high-resolution gamma-ray imager for advanced nuclear nonproliferation and safeguards applications.
* Earlier awards include contracts for various detection research and developement with the United States Army.

**Leadership & Team:**

* Xin Sun, Founder & CEO: Holds a Ph.D. in Nuclear Engineering from the University of Michigan and has extensive experience in radiation detection and imaging. Prior to H3D, he was involved in research and development of advanced detector technologies.
* Zhong He, Founder & Chief Scientist: Professor of Nuclear Engineering and Radiological Sciences at the University of Michigan, renowned expert in CZT detector technology.

**Competitive Landscape:**

* ORTEC (AMETEK): A major player in radiation detection and measurement instruments. H3D differentiates itself through its specific focus on CZT-based 3D imaging and compact spectrometer design, offering potentially higher resolution in a smaller package.
* Mirion Technologies: Provides a broad range of radiation detection and measurement solutions. H3D's competitive advantage lies in its specialized focus on CZT technology and 3D imaging capabilities, which may offer superior performance for specific applications like source localization.

**Sources:**

1. [https://h3dinc.com/](https://h3dinc.com/)

2. [https://www.neimagazine.com/news/newsdismantling-chernobyl-with-h3d-s-polaris-h-11646306](https://www.neimagazine.com/news/newsdismantling-chernobyl-with-h3d-s-polaris-h-11646306)

3. [https://www.sbir.gov/sbirsearch/detail/222-285497](https://www.sbir.gov/sbirsearch/detail/222-285497)