

**Statement by Kevin Conole, Alternate U.S. Representative to the
66th Session of the UN Committee on the Peaceful Uses of Outer Space
Agenda Item 9
“Spinoff Benefits of Space Technology”
June 5, 2023**

Thank you, Chair. The United States continues to “bring NASA technology down to Earth.” Developed during NASA mission work, these innovations are made available to entrepreneurs, companies, academia, and other government agencies through the NASA Technology Transfer program. Each year, NASA technologies find new life through secondary uses that benefit people around the globe.

For more than 40 years, NASA has tracked examples of successful commercialization in its annual *Spinoff* publication. We have documented more than two thousand space technologies that are improving life on Earth. Recent spinoff technologies include a new cancer diagnostic tool borne from radiation research on astronauts to a new sustainable, vegan food line based on a microbe found in one of the most well-known American landmarks – the hot springs of Yellowstone National Park.

It comes as little surprise that NASA is a world leader in improving the safety of commercial flights. But a single software is leading the way to help prevent potentially dangerous cracks and fractures caused by routine use. Ensuring safety for astronauts on the world’s first reusable spacecraft required NASA Space Shuttle engineers to take new approaches when calculating the structural dangers of small fractures. Not only was a Space Shuttle supposed to last for 100 missions, but it was the first combination of launch vehicle, aircraft, and spacecraft, and it was comprised of many complicated, critical structures, developed with materials that had vastly different fracture properties. The fracture-mechanics and fatigue crack-growth software they invented, called NASGRO, is now licensed by nearly a thousand companies across four continents, from airplane and spacecraft manufacturers to gas turbine producers.

Of course, protecting astronauts doesn’t just stop at reliable space vehicles. Astronauts who spend six months in space are exposed to roughly the same amount of radiation as 1,000 chest X-rays. Having multiple kinds of radiation bombard their bodies puts them at risk for cancer, central nervous system damage, bone loss, and some cardiovascular diseases. No one is certain about the exact level of risk, so NASA

funded research into a new method for measuring radiation damage to humans. Two decades later, that fundamental science supports a diagnostic test to improve cancer treatment on Earth, called the OncoMate MSI Dx Analysis System.

And lastly, Chair, a potential new food source for astronauts being tested on the International Space Station is the basis of a new line of sustainable, vegan protein breakfast foods you can buy at major retailers. Discovered in a hot spring at Yellowstone National Park during a NASA-funded trip, this fungal protein contains all the essential amino acids that make up animal-based proteins, with the ability to be transformed into products such as breakfast patties and even cream cheese. And because this microbe grows in an acidic liquid that is inhospitable to bacteria and other organisms that might contaminate it, pesticides and antibiotics are not required.

These are just a few examples of the ways we ensure innovations developed for space exploration are benefitting the nation by creating jobs, protecting the planet, and improving lives globally.

Additional information about these and other spinoffs can be found in the NASA publication *Spinoff* 2023, which can be found online (at <https://spinoff.nasa.gov/>).

Thank you, Chair.