Another Threat to Earth: "Mars Sample Return"

Contributed by Barry DiGregorio
08 April 2009

Editor's note: After Culture Change ran its recent report on agroplastics, science writer Barry DiGregorio contacted us. He had interviewed anti-plastics crusader Capt. Charles Moore, and we ran the story. Barry hoped Culture Change would be interested in another crisis:
the Mars sample return. Just when you thought the Earth has enough problems...
the idea of irresponsible contamination from another planet is just more proof that modern society has gone insane.

If the technocrats and Military-Industrial Complex remain in power much longer, for lack of sufficient economic collapse, they will do anything conceivable, just because it can be done. If the whole nuclear debacle seems like enough craziness already, think again. Fools who believe it's okay to trash Earth because we can just move out to outer space are not even watching against consequences of careless exploration.

According to the late Dr. Carl Sagan, "one terrestrial microorganism reproducing as slowly as once a month on Mars, without other ecological limitations, in less than a decade would result in a microbial population of the Martian soil comparable to Earth". Barry DiGregorio and his international committee ask, "What if the reverse is true of a single Martian microorganism that could reproduce on the Earth?" - Jan Lundberg

Barry DiGregorio wrote to Culture Change on March 24, 2009:

I thought you might like to know that besides my role as a freelance science writer, I am also Director for the astroenvironmental group ICAMSR, an acronym for "International Committee Against Mars Sample Return" www.icamsr.org . We are dedicated to preserving Article IX of the original 1967 United Nations Outer Space Treaty, signed by all space faring nations, that forbids the cross-contamination of celestial bodies. Yet since its inception, NASA and other space agencies have manipulated and distorted Article IX to the point where we can now crash probes into the Moon whenever we choose or to send millions of Earth microbes inside our spacecraft to planets such as Mars, Jupiter and Saturn's moon Titan. Since 1982, planetary protection guidelines have been slowly eroded away, erroneously assuming we know all there is to know about the limits of microbial life in the solar system. We have only just begun to understand the limits of microbial life.

We at ICAMSR currently have an "Open Letter to the Scientific Community" http://www.icamsr.org/let_tpgm.html about a new Russian mission (called Phobos-Grunt, Grunt is the Russian word for soil) that will scoop up samples of the Martian Moon Phobos and return them to the Earth. The spacecraft will also carry a Planetary Society experiment called LIFE which has 30 small vials of terrestrial microbes to test whether or not they can survive the 34 month trip to out to Phobos and back to Earth. If you read through our Open Letter, you will see that this mission not only risks contamination of the planet Mars with Earth microbes if a mishap occurs, but also because Phobos could potentially be made of actual debris from Mars itself blown out in an asteroid strike millions of years ago and could carry a small risk of having any putative Martian microbes in stasis in its icy soils. We feel because of this, that there is a remote but still significant chance we could contaminate our world when these samples are returned to Earth. This mission launches in October of this year.

After reading the Open Letter [below] at http://www.icamsr.org/let_tpgm.html and you feel it appropriate to do so, I give Culture Change permission to post the letter in its entirety on your online journal.

Finally, just to let you know, everyone at ICAMSR volunteers their time and efforts. There are no membership fees or things to sell. We are trying to get out a message that NASA and other space faring nations are not adhering to the principles set up for planetary protection as outlined in the original 1967 UN Outer Space Treaty. This is unscientific and dangerous in our view.

Sincerely yours,

Barry E. DiGregorio - Director for ICAMSR

www.icamsr.org

THE PHOBOS-GRUNT MISSION

TAKE YOUR CHOICE – FORWARD OR BACK CONTAMINATION?

An Open Letter to the Planetary Scientific Community

February 9, 2009

As Director of the international astroenvironmental organization ICAMSR (International Committee Against Mars Sample Return), I am often asked why we are against Mars exploration? The fact is nothing could be further from the truth. ICAMSR has been online since January of 2000 and has always promoted planetary exploration of Mars as long as it did not violate article IX of the United Nations Outer Space Treaty of 1967, which plainly states:

“In the exploration and use of outer space, including the Moon and other celestial bodies, States Parties to the Treaty shall be guided by the principle of co-operation and mutual assistance and shall conduct all their activities in outer space, including the Moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty. States Parties to the Treaty shall pursue studies of outer space, including the Moon and other celestial bodies, and conduct exploration of them so as to avoid their harmful contamination and also adverse changes in the environment of the Earth resulting from the introduction of extraterrestrial matter and, where necessary, shall adopt appropriate measures for this purpose. If a State Party to the Treaty has reason to believe that an activity or experiment planned by it or its nationals in outer space, including the Moon and other celestial bodies, would cause potentially harmful interference with activities of other States Parties in the peaceful exploration and use of outer space, including the Moon and other celestial bodies, it shall undertake appropriate international consultations before proceeding with any such activity or experiment. A State Party to the Treaty which has reason to believe that an activity or experiment planned by another State Party in outer space, including the Moon and other celestial bodies, would cause potentially harmful interference with activities in the peaceful exploration and use of outer space, including the Moon and other celestial bodies, may request consultation concerning the activity or experiment.”

During the time that Daniel Goldin was the NASA Administrator there was a strong push for NASA to return Martian soil samples on the faster-better-cheaper philosophy it adopted with the first samples set to arrive in 2003 and 2005. This is when ICAMSR was born as a people's planetary protection awareness organization – to let them know something was amiss.

Some nine years later it is generally recognized by the scientific community, that a Mars Sample Return mission was impractical and dangerous in 2003 and 2005 as it was originally planned. The truth is we didn't really know how to achieve Mars Sample Return safely without the possibility of contaminating the Earth with potential deadly forms of Martian microbial life. Even if Martain microbes were benign to our biosphere, we still had to assume they wouldn't be and needed to take the utmost precautions. After all, we only have one Earth and we might only just get one chance at getting a Mars Sample Return right. So we ere on the side of caution.

It has now come to my attention that The Planetary Society along with the aid of Germany and Russia are sending 30 small vials of terrestrial microorganisms aboard the Russian Phobos-Grunt mission to land on the Martian moon Phobos and then return them to the Earth.

planetary.org/programs/projects/life/facts.html

Phobos-Grunt is scheduled to launch in October 2009 and also has a capsule mounted on an Earth return rocket that will scoop up soil and rock samples of the Martian moon Phobos and return them to the Earth in 2013. The sample return canister will not use a parachute and impact the ground somewhere in Russia where it will be take to a laboratory for examination.

ICAMSR was never just concerned with the unsafe return of samples from Mars to Earth, but also how terrestrial microorganisms riding inside improperly sterilized spacecraft going to Mars might contaminate the red planet.

Scientists of ICAMSR and others believe there is a strong possibility that living or viable microorganisms might still exist on Mars. Both the evidence from the Viking biology Labeled Release experiments of 1976 and the new seasonal methane observations on Mars by Mumma et al in the January 15, 2009 journal Science support this.

A number of planetary scientists have published that several percent of Martian rock and soil might be found on its moon Phobos, ejected there by asteroid strikes on Mars. Still other theories suggest that Phobos is entirely Martian rock and soil material ejected into space from Mars during an asteroid impact. Since it is deemed increasingly likely that Mars harbors extant living microorganisms; Phobos might also be infected with them by such material from Mars, which might remain preserved in icy soils or within small rocks and subject to resuscitation if brought back to Earth.

It is now commonly believed that spacecraft carrying "hitchhiking" microorganisms could survive interplanetary transport and is the reason planetary protection protocols were set up by the United Nations in the first place. Phobos-Grunt could become contaminated with such microorganisms during its stay on the moon Phobos while gathering samples for return to Earth. No matter how remote this possibility may be, I believe it exists to the extent that such samples should not be returned directly to the Earth. The benefit/risk ratio of such a potentially calamitous prospect strongly argues against this sample return project.

Furthermore, should the Phobos-Grunt spacecraft carrying The Planetary Society sponsored LIFE experiment

(containing terrestrial microbes) crash onto Mars by some mechanical mishap or engineering error, the organisms might be released to contaminate the planet. One of the terrestrial microbial samples placed inside the LIFE experiment are methanogenic bacteria taken from the Russian Tundra. These types of organisms are exactly the kind that might well survive and be spread on Mars by winds and dust should the spacecraft have a mishap and crash on Mars. What a crime to science it would be just as we are on the verge of making the greatest scientific discovery in history (life on Mars) that we might contaminate it with Earth life and thereafter never be able to discern whether the life on Mars was indigenous or put there by us.

Speaking for ICAMSR, I believe that this mission would violate the provisions of Article IX of the Outer Space Treaty: to avoid harmful contamination of other celestial bodies, “to avoid adverse changes to the environment of Earth resulting from the introduction of extraterrestrial matter”. “Harmful contamination” as used in article IX of the Outer Space Treaty, includes being harmful to the research programs of other parties to the treaty.” The proposed experiment clearly violates even this restriction.

www.state.gov/www/global/arms/treaties/space1.html#1

The proper way for such an experiment to proceed would be to return the spacecraft with living samples and possible Martian infection to a proper receiving facility in High Earth Orbit, where it could be examined by a specially-trained astrobiology astronaut team for pathogens. Then if deemed “not harmful to the Earth’s biosphere”, it could then be brought to the sample receiving facility recommended by the National Academy of Sciences in the hyperlink below. So far no such sample receiving facility has been built anywhere on Earth, and according to the report would take many years to do so.

"Recommendation: It is imperative that planning and construction of the Mars Quarantine Facility be begun at least 7 years in advance of the anticipated return of Mars samples. This responsibility cannot be deferred without compromising the quarantine and study of the Mars samples. [Chapter 6]"

www.nap.edu/openbook.php?isbn=0309075718

On behalf of ICAMSR, its scientist advisors and associates, and of all living beings on Earth, I would like you to review this situation with respect to the United Nations Outer Space Treaty of 1967.

It is our hope that you and the planetary science community will review this mission and others like it in the future with your colleagues and inform them of the urgency and importance of preventing possible forward contamination of the planet Mars such as the Russian Phobos-Grunt mission poses and possible back contamination of the Earth.

Please share your views with the governing body for all nations regarding planetary protection issues and forward and back contamination here:

Office for Outer Space Affairs

United Nations Office at Vienna

Vienna International Centre,

Wagramerstrasse 5,

A-1220 Vienna

AUSTRIA

Telephone: +43-1-260 60 4950

Fax: +43-1-260 60 5830

E-mail: oosa@unvienna.org

* * * * *

The photo is published under Title 17 U.S.C. Section 107. See the Fair Use Notice for more information.