



# The Horizon Newsletter

## August 2020

### **Volgograd Industrial Explosion 2020:**

*By Aaryan Kumar*

Many people have talked about the Beirut explosion and how it killed around 137 people. Not as many people know about the Volgograd Explosion on August 11<sup>th</sup> that claimed the lives of 13 industrial workers. The 13 people that were killed were firefighters who had been called in before the explosion to put down the fires. It is believed that the fire started when electricity reached an underground storage tank. Authorities realized what was occurring and begun an evacuation that was complete by the time the firefighters arrived. This was the point at which the fire exploded and blazed to about 1,000 square meters, killing 13 firefighters in the process. This resulted in a team that eventually mounted to about 70 firefighters which worked together to halt and stop the fire from blazing, eventually accomplishing their goal. A notable detail about this particular blaze was that a robot was deployed in an effort to halt the blaze and was remotely driven to

the source to extinguish it. We can only hope that accidents such as the Beirut and Volgograd explosions are not part of a pattern

## **Life on Mars?**

*By: Arya Bharti*

Are we alone in the universe? Is there something or someone out there among the eternal void of darkness? Life outside our planet seems to shy away in every corner of the galaxy we examine. However, instead of searching for intergalactic aliens, should we instead take a closer look into our own planetary backyard? Recently scientists have shone some light on the possibility of ancient life on the most understood and explored planet in our solar system besides Earth: Mars.

Mars, for a while now, has been the ideal location for humanity to begin a hypothetical space colony as the planet is nearby and most Earth-like in our solar system. However looking at Mars almost feels like looking into The Mirror of Souls, on one side we have ourselves this lush green planet filled with colorful life and on the other, we glare at this barren red dust ball that for some reason seems familiar to our home. Some scientists now believe that in the past Mars was more earth-like than the earth itself at the time.

There is strong, almost irrefutable evidence that Mars once harbored liquid water in the form of rivers or even oceans. So why haven't we seen any life forms on the Red Planet? Life is an irregularity in space, something that has its own will



among the vast nothingness of space. Currently, we have no idea how common or rare life is, let alone how long it takes for it to emerge. Without a proper atmosphere and magnetic field, to our knowledge, life on our sister planet would be impossible. But who knows what surprises Mars has in store for us.

## ***A Covering Purpose***

by Sumant Anantha

Why do we wear masks? What is the point of having clothed fabric on our faces? The best way for you to not get Covid-19 is to wear that piece of fabric not for your own good but for others. Masks are one of the reasons why people will not get Covid-19. This disease spreads rapidly from person to person and the best way to block that transmission is to wear a mask over your mouth. You will never know who can be contagious or even if you have the virus already. In order to be prepared for that scenario, it is always



accurate to wear a mask. An example of this type of situation can be from the NC State University dorms where many students lived/moved into the dorm without wearing any masks. Because of that, everyone in the dorms got Covid-19 and had to be sent home resulting in virtual classes instead. Even at social parties people do not wear masks and get the virus from there, transporting it into other areas.

There is a reason why masks should be worn because you never know who has the virus and also to help protect those around you.



Masks not only have an effect on physical health but also the country's economy. Because of the virus, jobs were lost and the economy started to plummet. The masks could offer an

economic boom for the country. Goldman Sachs says “If a natural mask mandate was authorized as substitute lockdowns”, then the economy can gain back some of the losses from other institutes. Wearing a mask has the potential to help citizens from getting the virus and spreading it to others along with providing benefits towards the economy.

## **Tropical Storms**

*By: Neha Kamichetty*

Currently, the world has been really disturbed because of the coronavirus pandemic. Adding to the list of issues are the two tropical storms that are headed to Louisiana and Texas. Marco and Laura are heading towards the coast of Louisiana and the east of Texas. The National Hurricane Center expects rain on Monday and Wednesday. Covid-19 isn't making the situation easier since the cases are rising more. California isn't having it easy either, because of its large wildfires. However, the coronavirus daily cases have been falling by 29% in Louisiana which is definitely good news. It may reverse if the health guidelines are not followed. In a 3 day span the twin hurricanes will strike the states.

My Source: *Derek Hawkins, Marisa Iati. “Coronavirus Update: Extreme Weather Threatens Pandemic Response in Hard-Hit States.” The Washington Post, WP Company, 23 Aug. 2020,*

[www.washingtonpost.com/nation/2020/08/23/coronavirus-covid-updates/?outputType=amp](http://www.washingtonpost.com/nation/2020/08/23/coronavirus-covid-updates/?outputType=amp).

## **Samsung's New Smartphone for Military Use**

*By: Shrihan Dadi*

Samsung recently designed a super-rugged tactical smartphone for military use. It is essentially a tactical version of the popular Galaxy S20. The tactical version comes with features such as extra encryption, off-grid communication, and drone feed integration. Samsung states that the phone has been tested in the field for wear and tear. This phone is not available for

the public to purchase: it can only be purchased through specific military channels (i.e. the US Department of Defense). It can fit in a multiple of cases and adapt to the mission when needed. The phone contains special buttons and tools that will help operatives and medics on missions that are not available on regular phones.



## **A Non-Deadly Covid-19 Virus?**

*By: Harvik Kolla*

Studying Covid-19, as we all know, is not easy. Scientists handling the virus must wear full-body biohazard suits with pressurized respirators and need to work inside laboratories with multiple containment levels and specialized ventilation systems. While all these are necessary to protect biologists, these restrictions actually slow down and hinder the progress made.

To help combat that, researchers at Washington University School of Medicine have created a virus that will enable more scientists to enter the fight against the pandemic. They genetically modified a small virus by swapping out a gene from one for SARS-COV-2, the 'CoronaVirus'. The hybrid produced infects cells and is recognizable, just like SARS-COV-2. But the main hitting point is that it can be handled under ordinary lab safety conditions. This eliminates all the necessary precautions when handling SARS-COV-2.

The researchers genetically modified a mild virus by swapping one of its genes for one from SARS-CoV-2, the virus that causes COVID-19. The resulting hybrid virus infects cells and is recognized by antibodies just like SARS-CoV-2, but can be handled under ordinary laboratory safety conditions.

Sean Whelan says that this is most requests they have ever received for genetic material: "We've distributed the virus to researchers in Argentina, Brazil, Mexico, Canada and, of course, all over the U.S. We have requests pending from the U.K. and Germany. Even before we published, people heard that we were working on this and started requesting the material."

In order to create a model of SARS-CoV-2 that would be safer to handle, the researchers started with vesicular stomatitis virus (VSV). This virus is extremely common in virology labs because it is fairly innocuous and easy to manipulate genetically. Usually, this virus would cause 3-5 days of flu symptoms in humans. The researchers removed VSV's surface-protein gene

and replaced it with the one from SARS-CoV-2, known as spike. The switch created a new virus that targets cells like SARS-CoV-2 but lacks the other genes needed to cause severe disease. They dubbed the hybrid virus VSV-SARS-CoV-2.

This could be revolutionary to conducting studies and trying to find out possible vaccines to Covid-19. In addition, Since the hybrid virus looks like SARS-CoV-2 to the immune system but does not cause severe disease, it is a potential vaccine candidate. Whelan and colleagues are conducting animal studies to evaluate the possibility.



All in all, this would allow researchers to work in normal conditions, further increasing their efficiency to help the world combat this deadly pandemic.