Extra Credit Case

The year is 2019 and you are the first PharmD to venture into space aboard the spaceship *Marco Polo*. Your mission is to land on Phobos, the tiny moon of Mars, to study the potential for mining water for colony development on Mars. The crew is comprised of the captain and pilot Jeffery Tower, the co pilot Isabelle Santiago, Engineer Montgomery Scott, Chief Medical Office Leonard McCoy, Mission Specialist Mark Jacobs and yourself. The mission has proceeded as scheduled and you land at the designated site on Phobos 10 months after leaving Earth. While exploring the surface of the moon on a reconnaissance mission, the scouting party comprised of Santiago and Jacobs comes upon the remains of the spaceship and base camp left by the previous mission 2 years earlier down in a valley about 3 miles from the present landing site. Santiago vaguely remembers that a malfunction with the onboard navigation systems resulted in this spacecraft being abandoned only days before it was scheduled to return to Earth and another craft had to be sent to bring back the derelict crew. Repair scaffolding still stands around the ship.

While down in this valley communications are lost with the landing party and you hear nothing from them for 6 hours. Suddenly you receive a communication from Santiago indicating a medical emergency. Jacobs has had an accident while investigating the spaceship and Santiago is requesting assistance to the site immediately. Commander Tower, Dr. McCoy and yourself arrive at the site within the hour to find Santiago at the top of the valley standing over a prone Jacobs and administering supplemental oxygen mixture through a repair hose she has attached to a puncture in Jacob’s helmet face plate. Sealant has also been applied to make the helmet air tight again. All Santiago can tell the party is that she found Jacobs at the base of one of the rocket boosters near some scaffolding with a puncture to his face plate.

Jacobs is transferred to the *Marco Polo* and a medical exam is begun. His helmet is removed and you notice a 4 inch jagged opening in the face plate. The exam reveals an obtunded 34 yo male with erythematous areas on the left side of his face and neck. His vitals signs appear normal and blood is drawn to be analyzed. He has a fracture of his right arm and left ankle. He has vomited x 2. As he drifts in and out of consciousness he whispers to you in a barely audible whisper words “fell from scaffolding” and “puncture”. His lab studies reveal normal electrolytes but, curiously, evidence of hemolysis is present. Two hours after admission to the medical unit he begins to experience general tonic clonic seizures which are unaffected by treatment with diazepam. Dr. McCoy suspects a possible toxin may be the cause of Jacobs’ symptoms.

You are sent back to the accident site at the base camp to look for clues as to what possible toxin you may be dealing with. Upon examination of the site you find some face plate material on the ground at the base of one of the rocket boosters along with some scaffolding portions that appear to be damaged with bent weld joints. A particularly sharply pointed jagged edge of the scaffolding as well as the face plate appear damp and an unknown liquid is seen dripping down the booster. A portion of scaffolding is missing.
from the gantry above. As you take in the evidence it becomes clear to you what has happened here and how to treat Jacobs and you start the long trek back to the ship.

Name the Toxin involved and its Antidote