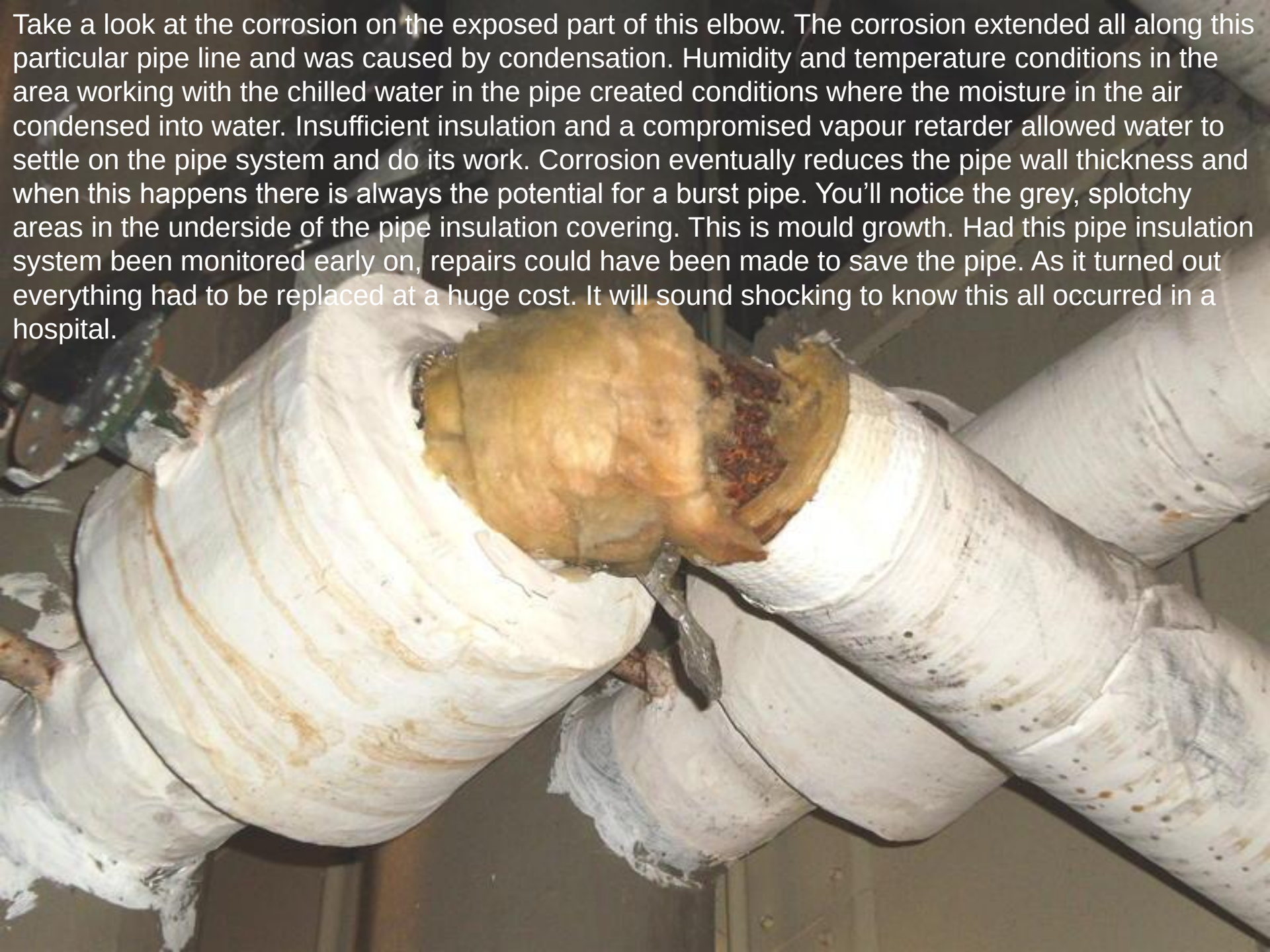

Take a look at the corrosion on the exposed part of this elbow. The corrosion extended all along this particular pipe line and was caused by condensation. Humidity and temperature conditions in the area working with the chilled water in the pipe created conditions where the moisture in the air condensed into water. Insufficient insulation and a compromised vapour retarder allowed water to settle on the pipe system and do its work. Corrosion eventually reduces the pipe wall thickness and when this happens there is always the potential for a burst pipe. You'll notice the grey, splotchy areas in the underside of the pipe insulation covering. This is mould growth. Had this pipe insulation system been monitored early on, repairs could have been made to save the pipe. As it turned out everything had to be replaced at a huge cost. It will sound shocking to know this all occurred in a hospital.

Here we have a steam line operating at 380F (193C). It's very typical for insulation to be removed to effect a repair. The insulation was never replaced until someone realized the pipe surface is very hot (hot enough to cause 3rd degree burns). Then they used a 1" (25 mm) blanket insulation; the right idea, but the wrong application. Maintenance personnel would routinely step on the insulation to access something higher up, crushing the insulation. The concern is personnel protection and wasted energy. Any health and safety inspector coming into this area would have to close it off and issue a work order. If this area had been monitored early on with a removable insulation cover installed where periodic access is required, the cost of upgrading would have been considerably less than replacing all of the insulation. Where maintenance personnel commonly step on pipe insulation, measures could be taken to mitigate the damaging effects. How about high density, high temperature insulation?

This is a picture of an uninsulated valve (one of 4 in this particular mechanical room), operating at 350F (177C). The insulation was stripped off 4 years ago to change a gasket, and never replaced. According to the maintenance manager, replacing the insulation would be a waste of money because at some point the insulation would only have to come off again. For 4 years, this valve has been wasting energy to the tune of 29,000,000 Btu's per year. This is the equivalent of a 100 Watt bulb burning continuously for 11 years and is the equivalent horsepower of 90 mid-size cars. This is one valve, in one building, in one city. What is the energy cost impact of this occurring (and it regularly does) in thousands of buildings, in hundreds of cities nationally? In addition to the issue of personnel protection, we are looking at wasted energy. The fix? A removable valve cover with a payback in 6 to 9 months. Take the removable valve cover off, repair what you have to and replace the valve cover. It starts working again immediately with no moving parts to wear out. This is a "shovel ready" application that only takes the realization of the consequences of leaving the valve bare.