

# A Very Bad Ideal Gas Worksheet

Please answer all of the disturbing questions on this sheet using your knowledge of the ideal gas law:

- 1) I am considering remodeling my house, and have a 55 L tank of nitrogen in my shed. This tank contains 15 kilograms of nitrogen gas and can withstand a pressure of 150 atm before exploding. If I were to “accidentally” heat this tank to a temperature of 815 degrees Celsius, would this tank explode and save me the demolition cost for my coming addition?
  
- 2) My pet squirrel Randy ate a 12 gram carbon dioxide paintball cartridge. Given that the normal body temperature of a squirrel is 37 degrees Celsius and his internal pressure is typically 1.1 atm, what will the final volume of the squirrel be if the paintball cartridge opens up in his belly?
  
- 3) I don't like my next door neighbor, but he doesn't know that. He's a stuntman, and recently hired me to fill the airbag into which he will fall during a “falling out of a building” stunt. I have filled the 144,000 liter airbag with 1500 kg of nitrogen gas at a temperature of 32 degrees Celsius. Given that my neighbor will only survive the fall if the pressure inside the airbag is between 1.2 and 1.4 atm, should I expect to get a new neighbor in the very near future?