

A tank problem.

A chemical manufacturing company has a 1000 gallon tank that water passes through at a rate of 80 gallons per hour. Initially the tank has 360 gallons of water containing 2 pounds of pollutant per gallon. Water containing 3 pounds of pollutant per gallon enters the tank (at a rate of 80 gallons per hour) and is uniformly mixed with the water already in the tank. Simultaneously, this mixed water is released from the tank (also at the rate of 80 gallons per hour). Determine how many pounds of pollutant are in the tank at any time t .

Alternate version.

Same as above but the water enters the tank at 80 gallons per hour and leaves the tank at only **40** gallons per hour. (Obviously this process can only go on until the tank is full!)