Problem 2

Recent drought has lowered the water levels at the Vaudreuil-Dorion water treatment reservoirs. The city has taken samples from three of the reservoirs to test for high concentrations of Boron (an element that can cause sterility if consumed in solution). Canadian water safety standards state that a safe concentration of Boron in drinking water is less than 5 ppm. As brilliant chemists, it is your responsibility to identify which of the reservoirs contain water that is safe to drink:

Boron Concentration

Reservoir A $0.0045 \ \% \ (^m/_v)$

Reservoir B $\dfrac{3 \ mg}{700 \ mL}$

Reservoir C $0.0649 \ g/L$

Reservoir A	Reservoir B	Reservoir C

Which reservoirs can the cities of Vaudreuil and Dorion use for drinking water?

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Solution

Reservoir A	Reservoir B	Reservoir C

Reservoir A

$$0.0045\ \%\ ^m/_v$$

$$\frac{0.0045g}{100ml} = \frac{x}{1000000ml}$$

X= 45

Concentration= 45ppm

Reservoir B

$$\frac{3\ mg}{700\ mL}$$

$$\frac{0.003g}{700ml} = \frac{x}{1000000ml}$$

X=4.3

Concentration= 4.3 ppm

Reservoir C

$$0.065\ g/L$$

$$\frac{0.065g}{1000ml} = \frac{x}{1000000ml}$$

X= 65

Concentration= 65 ppm

Answer: Only Reservoir B is Safe (Below 5 ppm of Bromine)