A.M.D.G.

A town in California relies heavily on tourists coming in to fish at the local lake. The California Department of Fish and Wildlife is concerned that there is a level of toxicity in the lake and that they may potentially shut down the lake. They decide that if more than 4% of the fish caught in the lake have detectable levels of mercury, they will shut down fishing at the lake (potentially devastating the local economy).

a) What are the null and alternative hypotheses?

b) What is the minimum number of fish that the Department of Fish and Wildlife should catch to make sure that they will have a normal distribution for their evaluation of the population proportion?

c) Describe a Type I and a Type II error in this situation in context of the problem.

Type I:

Type II:

d) The Department of Fish and Wildlife proposes two testing scenarios, one in which $\alpha = 0.01$ and $\beta = 0.10$, the other of which has an $\alpha = 0.05$ and $\beta = 0.05$. Which testing scenario do you think the town would prefer? Explain your answer.