

Question 6.1

Describe a situation or problem from your job, everyday life, current events, etc., for which a Change Detection model would be appropriate. Applying the CUSUM technique, how would you choose the critical value and the threshold?

Solution:

I work in the lead acid battery manufacturing industry. Given that lead is a cumulative toxicant is particularly harmful to health and the environment it is heavily regulated by state and federal agencies. A change detection model is appropriate for modeling the concentration of lead that employees are exposed to at their workstations. The mean would be determined from historical data and using the CUSUM technique, I would choose a threshold " T " and a value of " C " in a way that the model is much more sensitive than normal and can detect quickly. The cost of detecting false changes is miniscule compared to increased blood leads in employees.