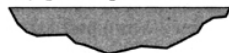

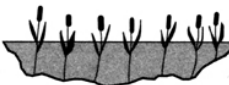


**Passage V**

In wetlands, the herbicides *atrazine* and *alachlor* are removed from the water by plant uptake or by adsorption onto soil particles and subsequent bacterial decomposition. Atrazine can also spontaneously break down to form *deethylatrazine* (DEA).

Three pairs of herbicide-free wetlands were established for a study: open water (O1, O2), submergent (S1, S2), and emergent (E1, E2), as described in Table 1. On 1 day, atrazine was added to O1, S1, and E1 and alachlor was added to O2, S2, and E2 to produce an initial herbicide concentration of 25 g/L in the water in each wetland. Atrazine, alachlor, and DEA concentrations in the water were measured at intervals over the next 120 days (see Figures 1–3).

Table 1	
Wetland	Description of wetland
Open water (O1, O2)	Few if any plants present in the water 
Submergent (S1, S2)	Abundant <i>submergent plants</i> (plants that grow beneath the surface of the water) 
Emergent (E1, E2)	Abundant <i>emergent plants</i> (plants that are rooted beneath the water and have portions that grow out of the water) 

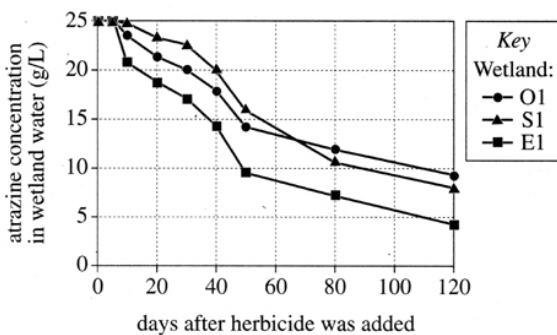


Figure 1

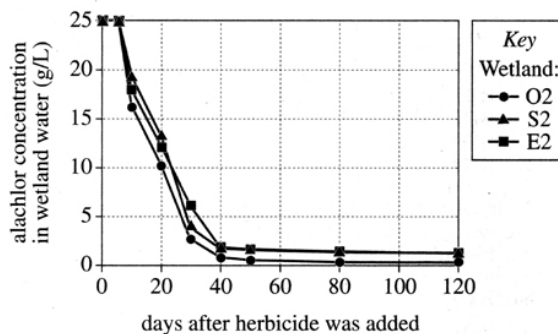


Figure 2

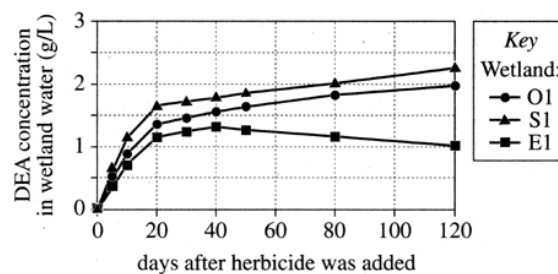


Figure 3

24. Assume that the volume of water in each wetland remained constant over the 120 days of the study. According to Figure 2, 120 days after alachlor was added, what percent of the original alachlor concentration remained in the water in E2 ?
- F. Less than 20%  
 G. Between 20% and 50%  
 H. Between 50% and 75%  
 J. Greater than 75%
25. According to Figure 1, 50 days after atrazine was added, its concentration in the water in S1 compared to its concentration in the water in E1 was about:
- A. 7 g/L lower.  
 B. 16 g/L lower.  
 C. 7 g/L higher.  
 D. 16 g/L higher.

26. According to Figures 1 and 3, in S1, as the atrazine concentration decreased, the DEA concentration:
- F. increased only.
  - G. decreased only.
  - H. increased, then decreased.
  - J. decreased, then increased.
27. Is the statement "Over the 120 days of the study, atrazine concentration was most reduced in the water in the open water wetland" supported by the data in Figure 1?
- A. Yes; 120 days after atrazine was added, its concentration was least in the water in O1.
  - B. Yes; 120 days after atrazine was added, its concentration was least in the water in E1.
  - C. No; 120 days after atrazine was added, its concentration was least in the water in O1.
  - D. No; 120 days after atrazine was added, its concentration was least in the water in E1.
28. As shown in Figure 2, every time the alachlor concentrations in the water in O2, S2, and E2 were measured during the study, the concentrations in S2 and E2 were found to be very similar to the concentration in O2. The most likely explanation for this result is that in S2 and E2:
- F. plant uptake played a more significant role in removing alachlor than did adsorption onto soil particles followed by bacterial decomposition.
  - G. plant uptake played a less significant role in removing alachlor than did adsorption onto soil particles followed by bacterial decomposition.
  - H. adsorption onto soil particles followed by bacterial decomposition played a more significant role in removing alachlor than did breakdown to form DEA.
  - J. adsorption onto soil particles followed by bacterial decomposition played a less significant role in removing alachlor than did breakdown to form DEA.