Selecting materials for structures and components involves consideration of numerous factors, including material properties, e.g. strength-to-weight ratio, resistance to fatigue, fracture, and various types of corrosion, as well as fabricability, cost, and availability. Choosing materials with ideal combinations of properties is usually not possible so that compromises are required, and failures often occur when due consideration is not given to (i) the effects of environment under the full range of operating conditions, and (ii) the effects of heat treatment on environmentally assisted cracking. Some examples of the above issues are described and discussed so that similar failures can be avoided in the future. Stress corrosion cracking of aluminium alloys is discussed in particular.