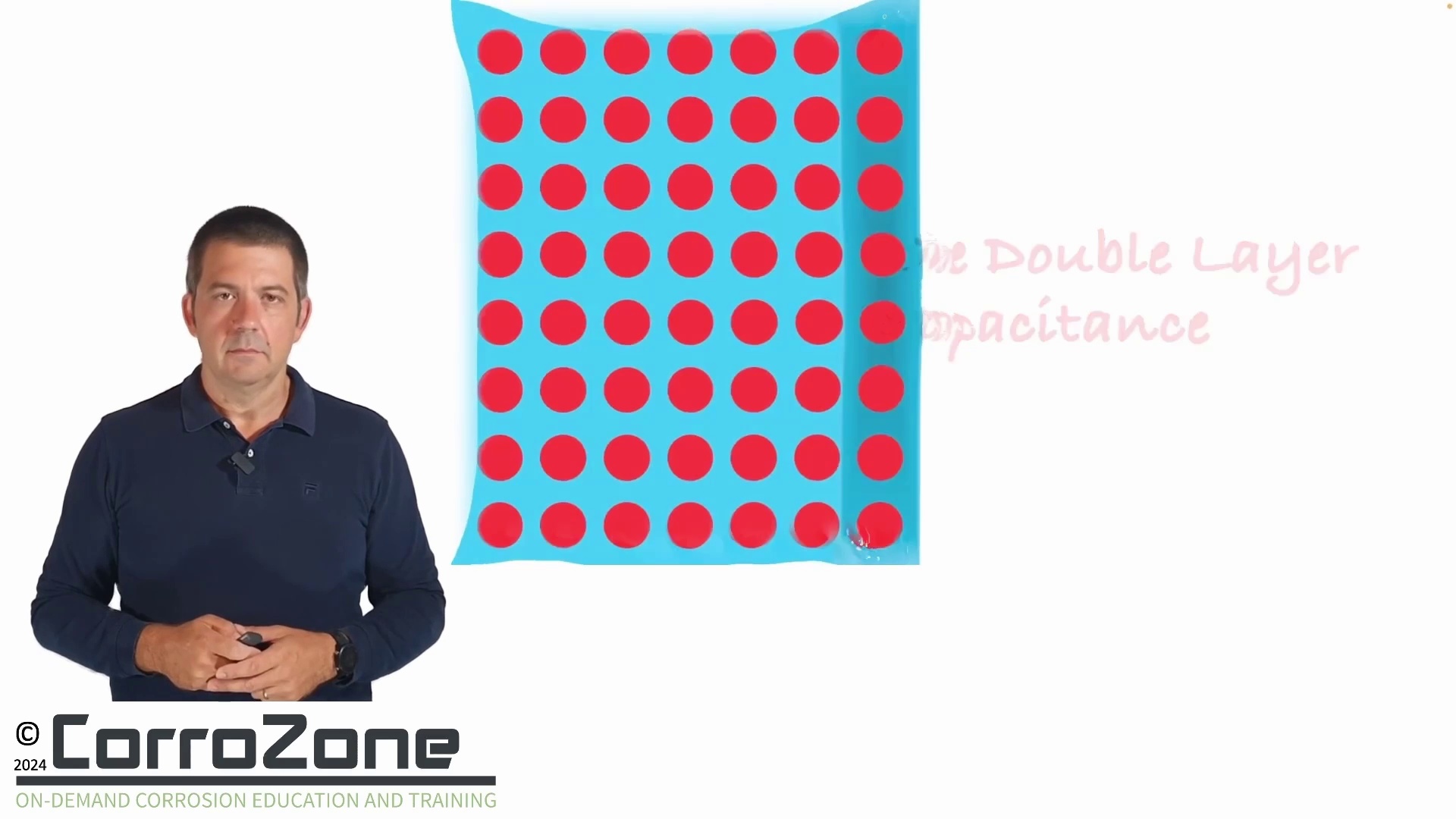
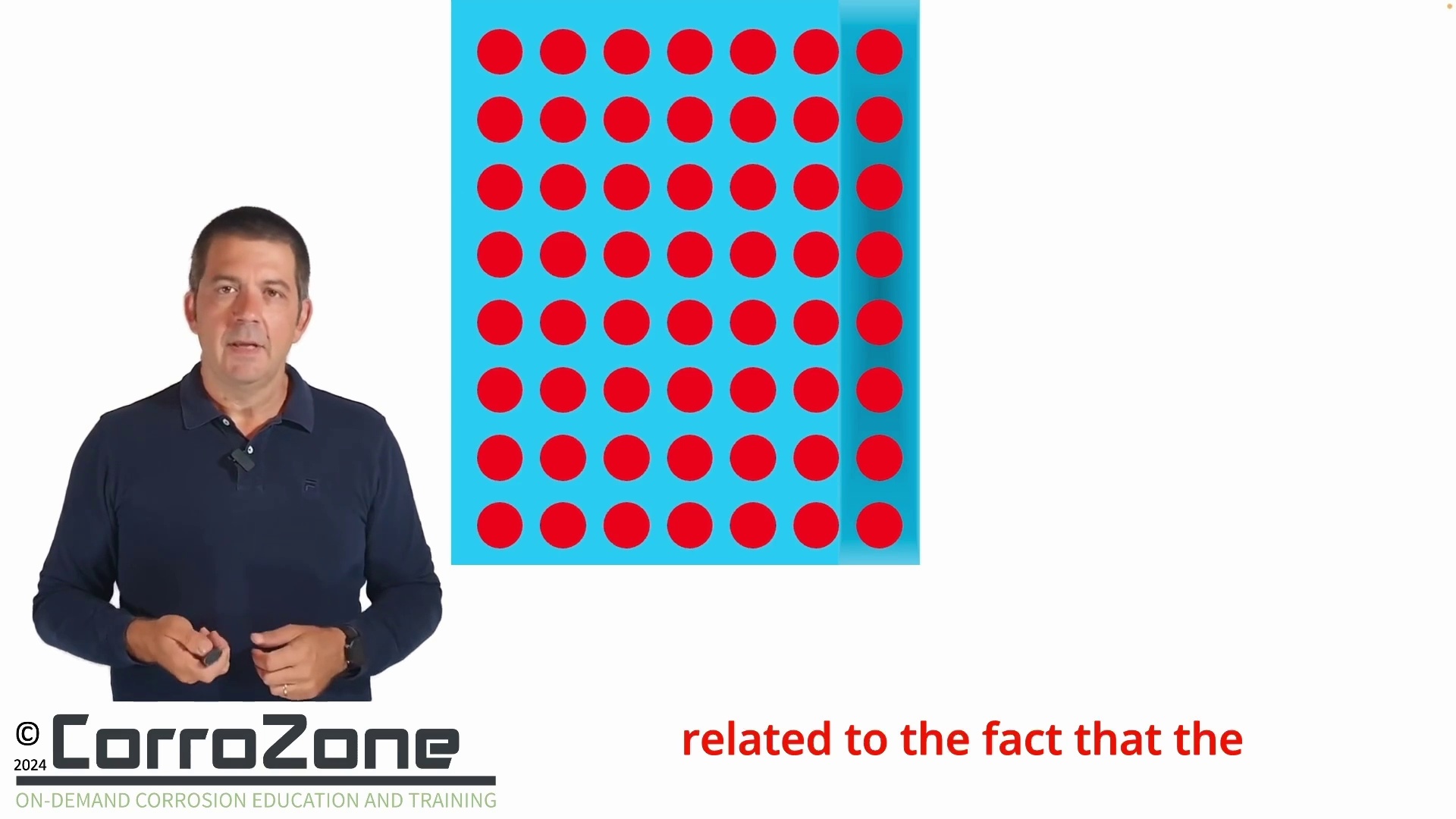
## Slide 1



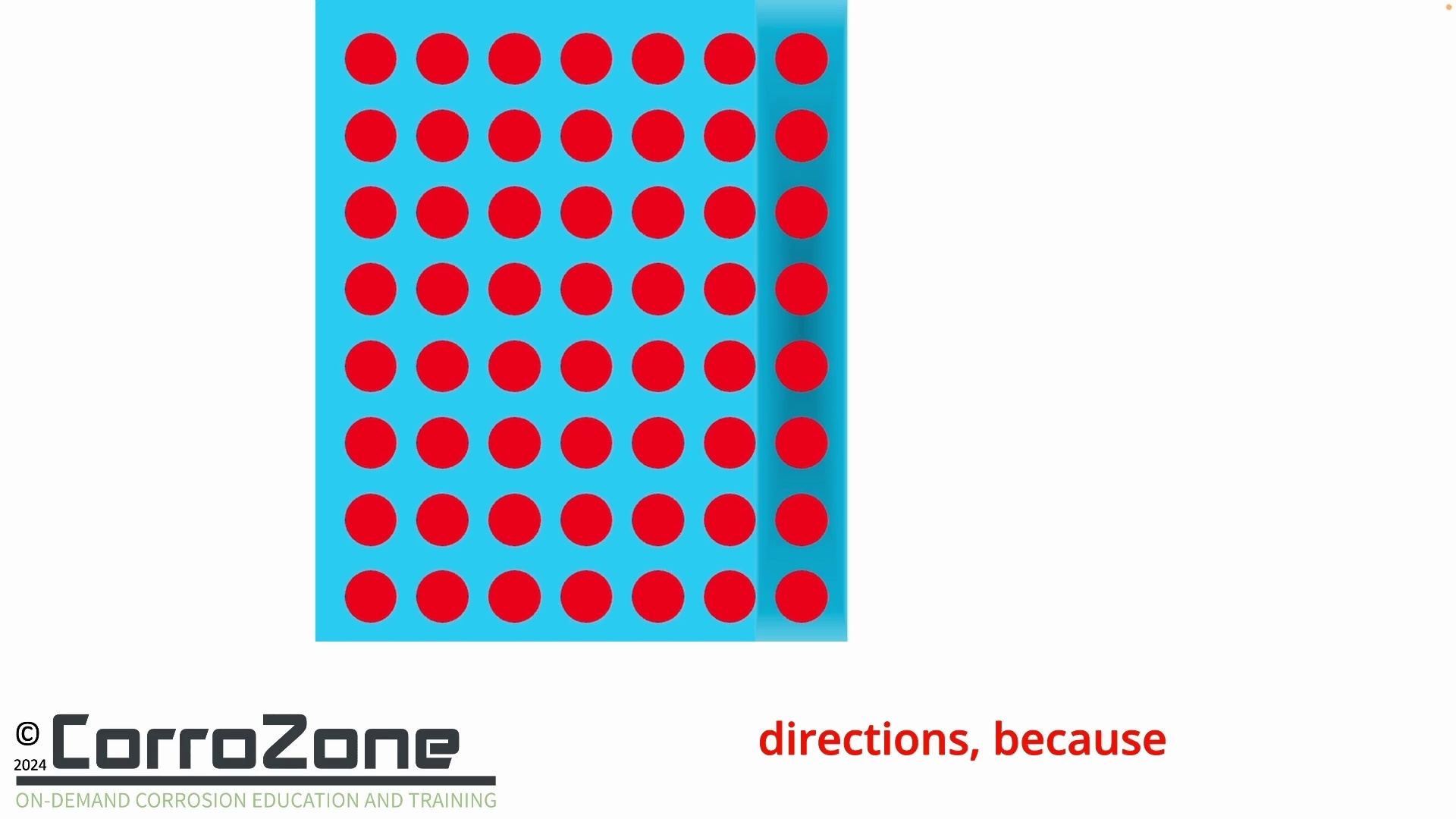
The existence of the electrical double layer at the electrode interface results in the formation of a capacitance. This capacitance significantly influences the overall impedance response of the system. The underlying reason for this phenomenon is the redistribution of electrical charge within the metal in proximity to its surface.

## Slide 2



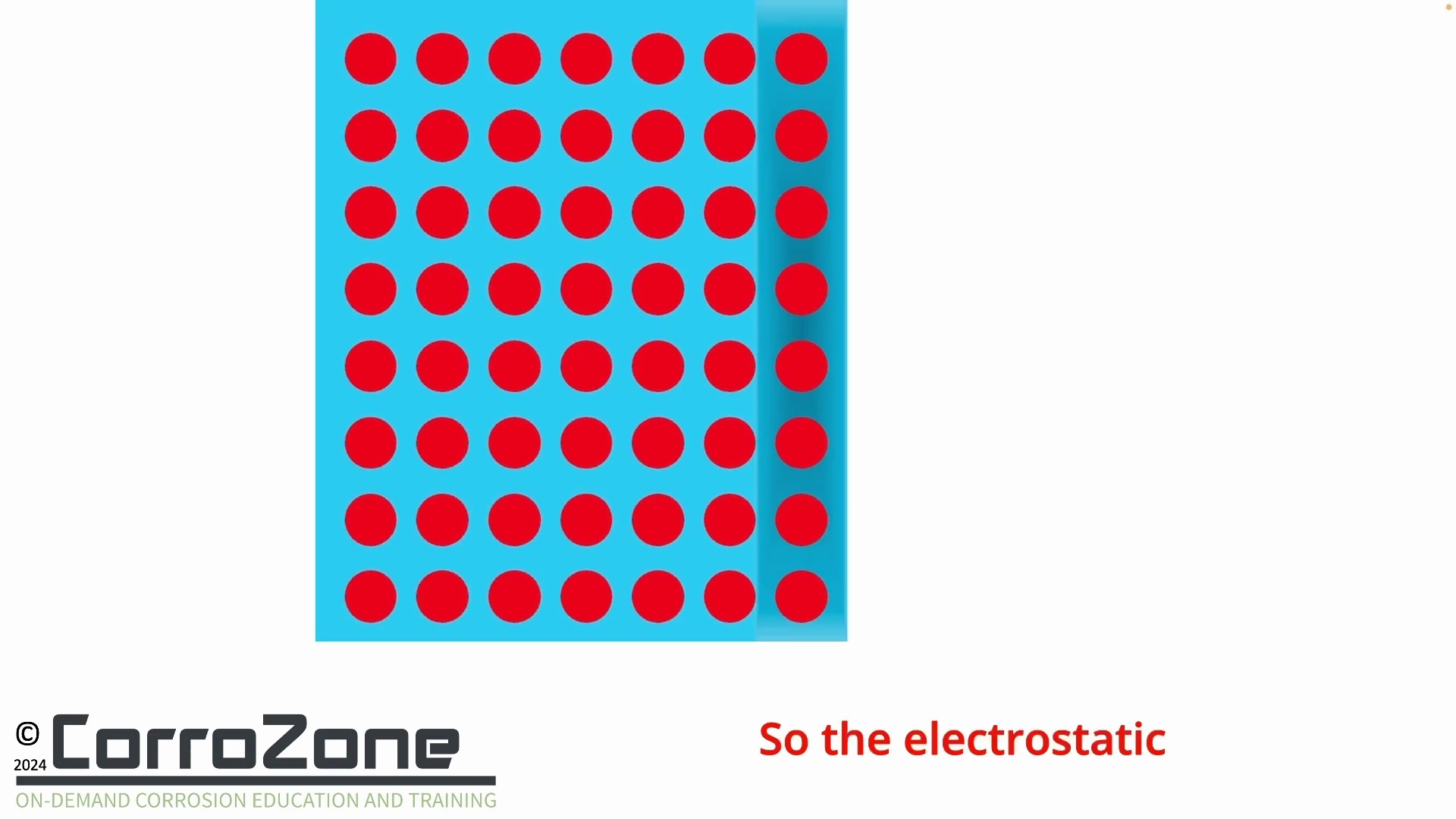
This phenomenon can be understood by considering that metal atoms located deep within the bulk of the material are enveloped by an electron cloud that exhibits complete symmetry in all directions. This isotropic distribution arises from the extensive and continuous crystal lattice structure that surrounds each atom uniformly in all spatial dimensions.

## Slide 3



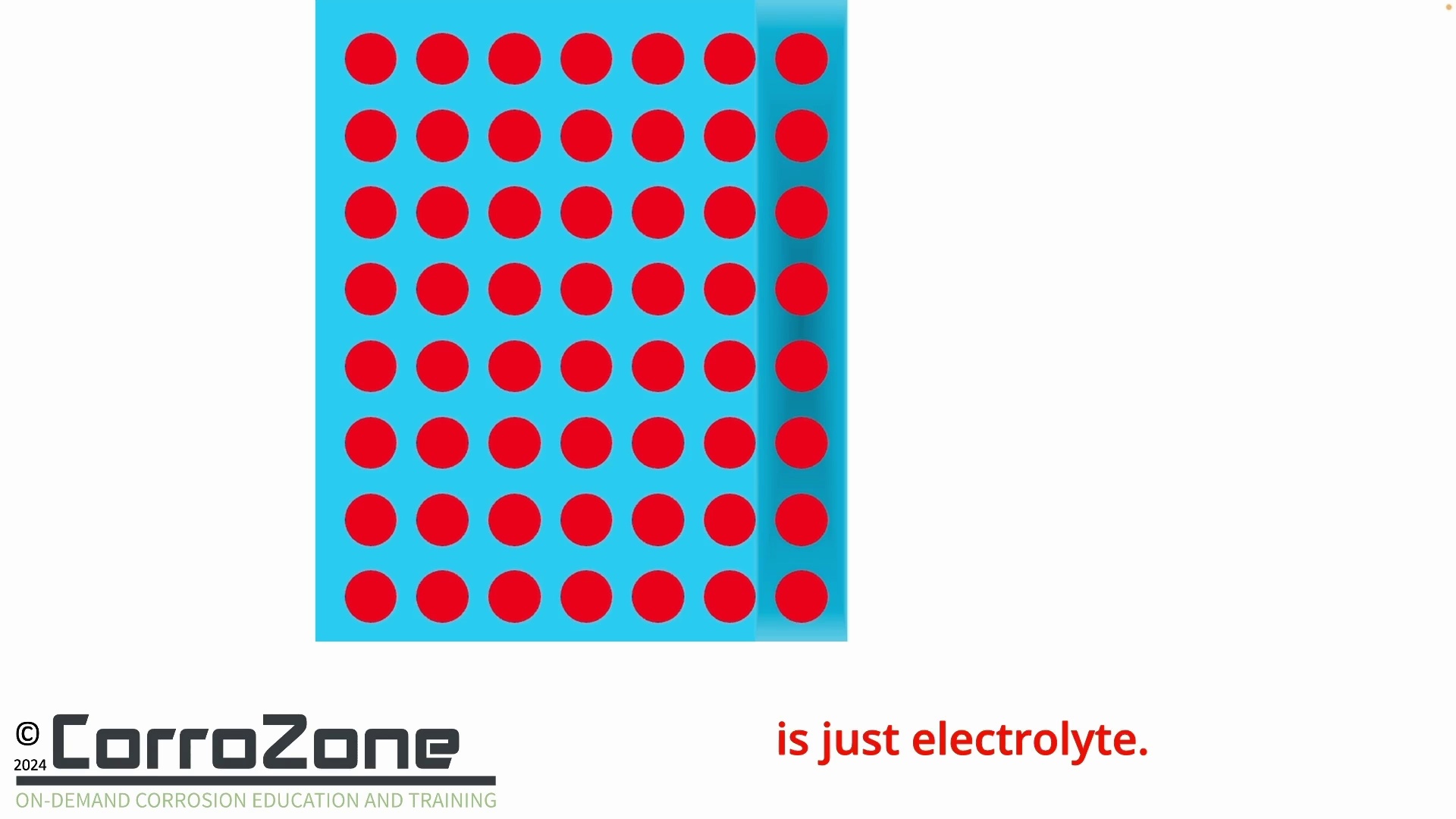
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## Slide 4



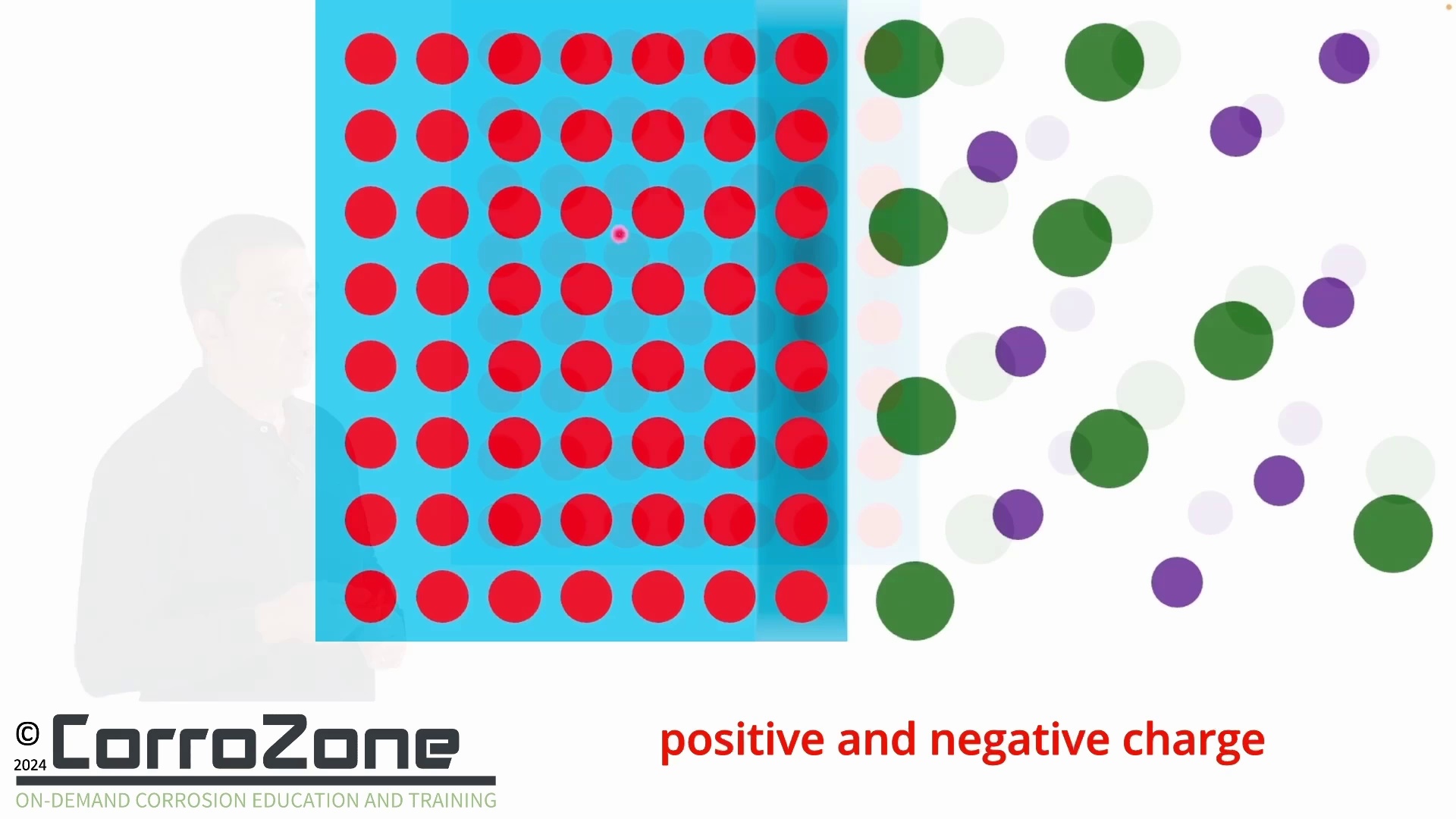
Consequently, for an atom positioned at a considerable distance from the surface, the electrostatic interactions are effectively balanced.

## Slide 5



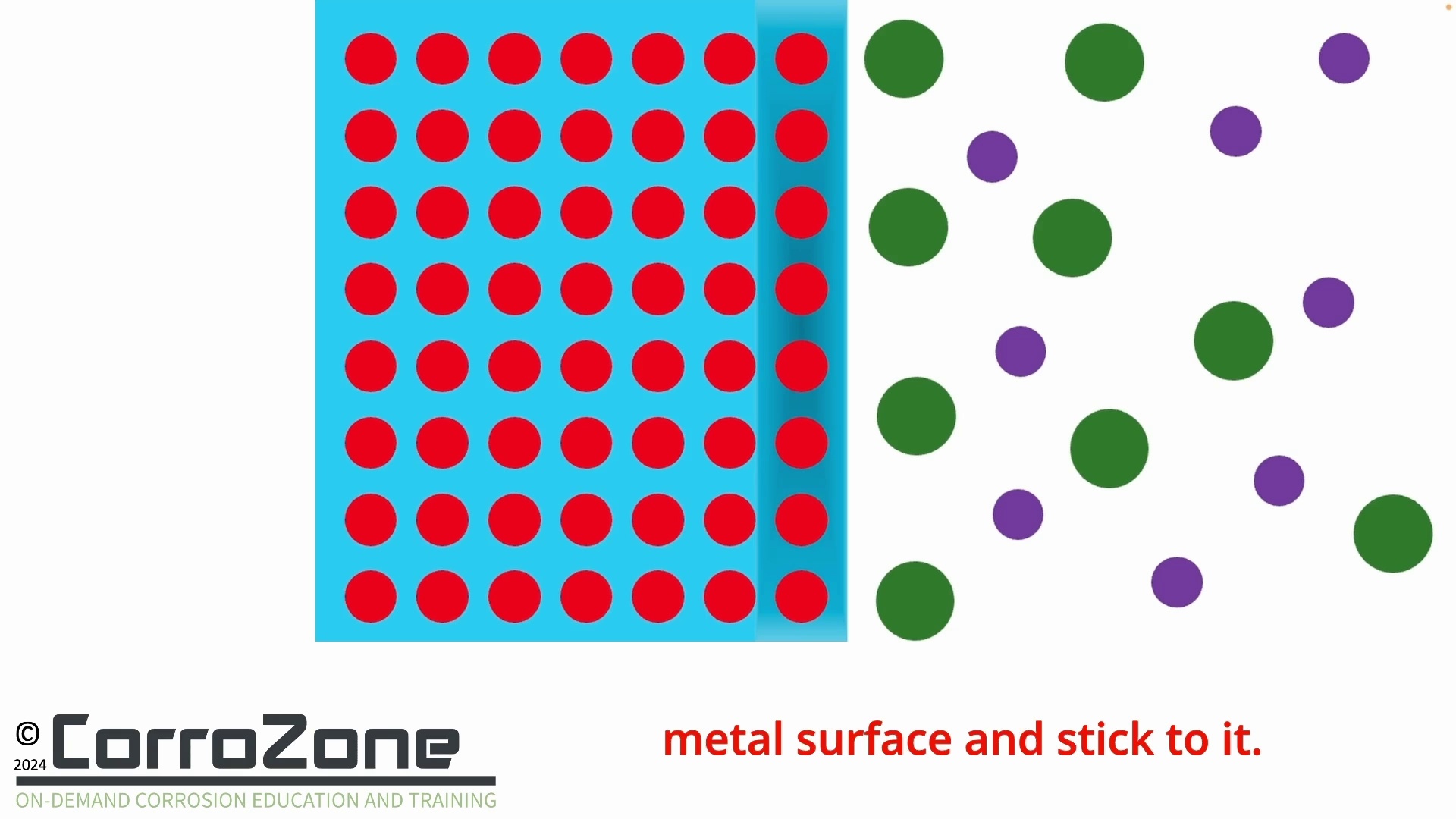
In contrast, atoms located at the metal surface experience an asymmetric environment. On one side, these atoms are coordinated with the bulk crystal lattice, while on the opposite side, they are exposed to the electrolyte.

## Slide 6



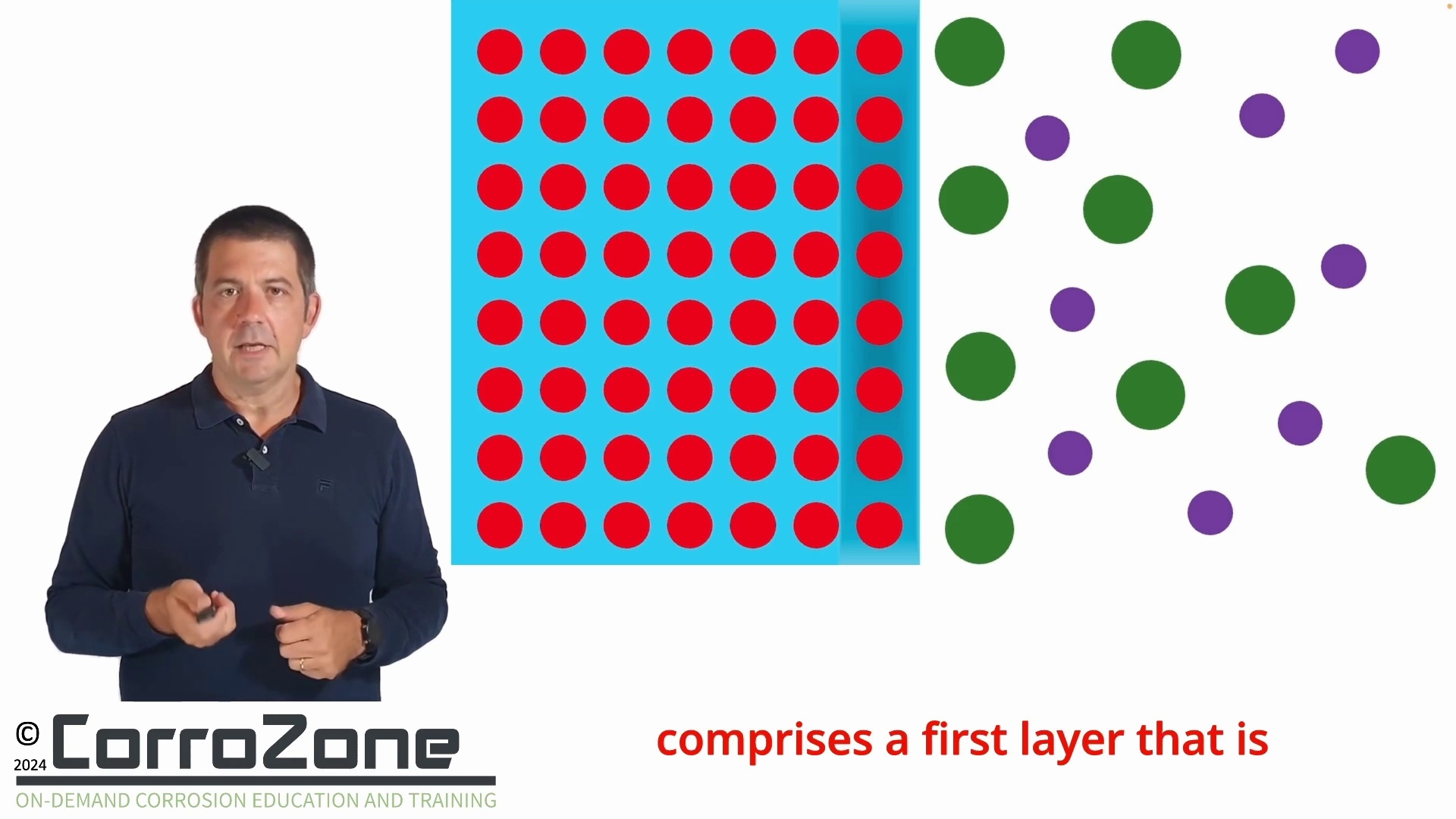
At the boundary between the metal and the electrolyte, a redistribution of charge occurs, resulting in the accumulation of positive and negative charges on the respective sides of the interface.

## Slide 7



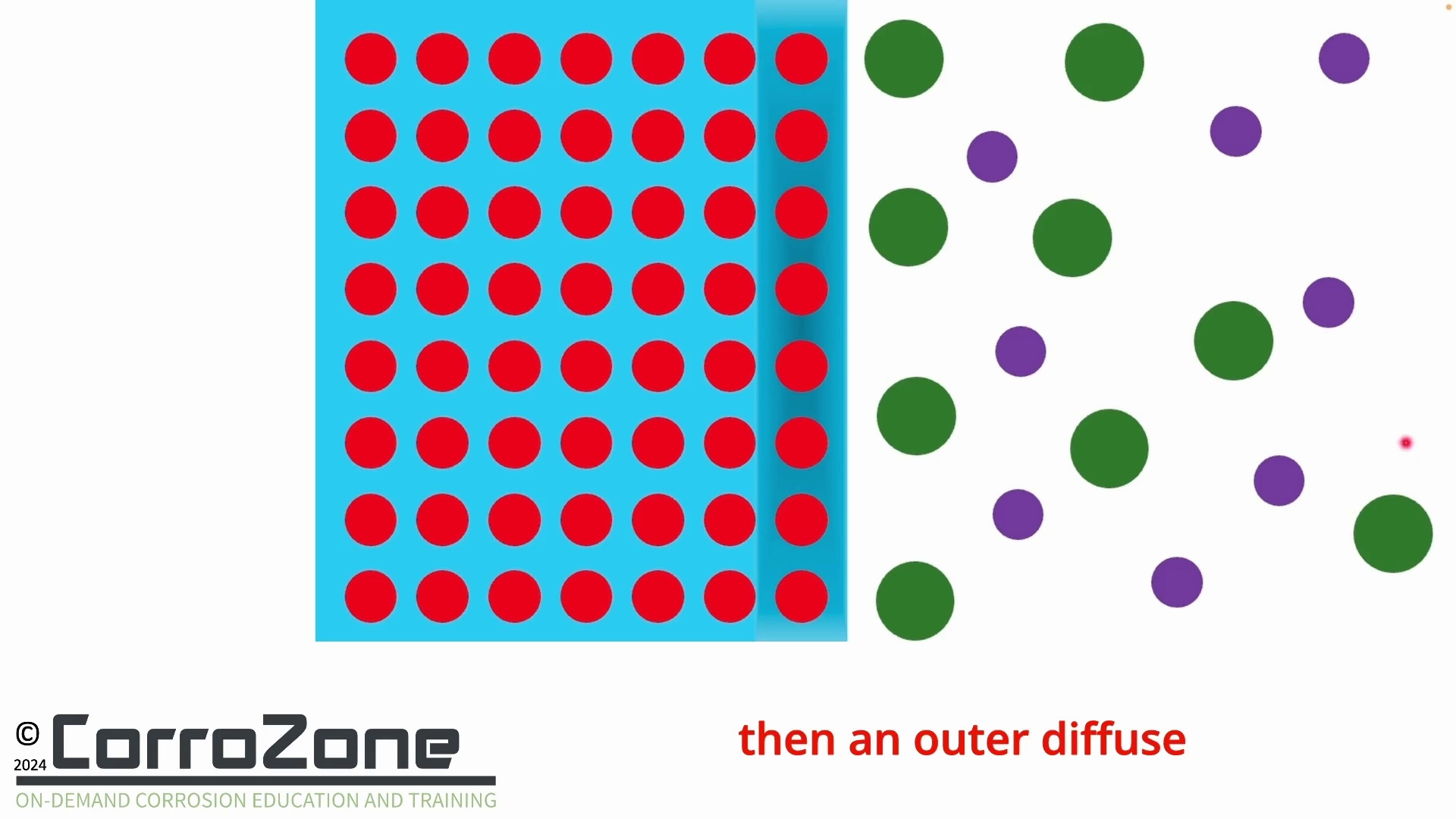
Furthermore, certain ions within the electrolyte may exhibit a propensity to adsorb onto the metal surface and remain attached.

## Slide 8



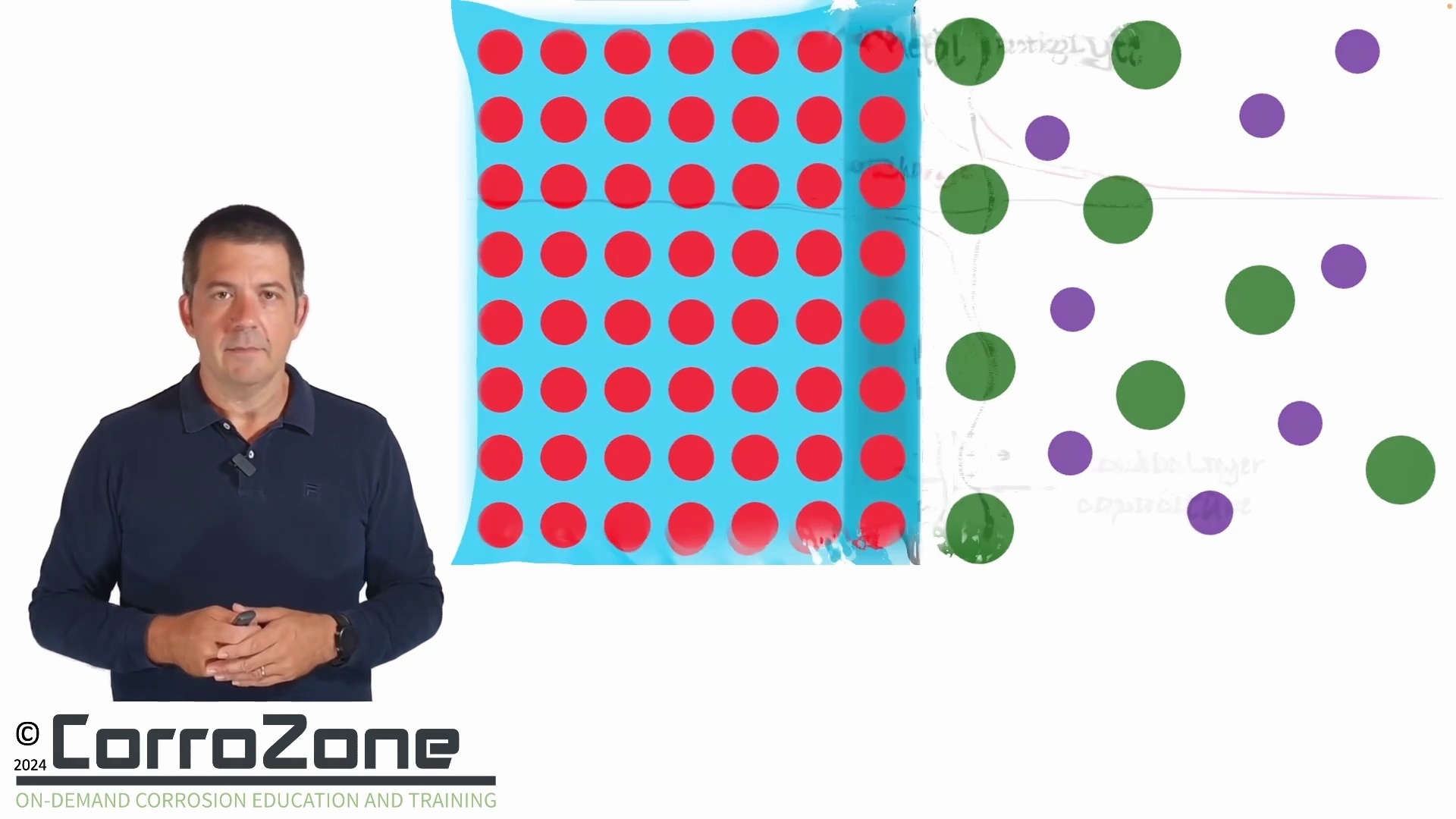
This scenario results in the development of the electrical double layer. The electrical double layer has been represented through several theoretical models; however, in general terms, it comprises a primary layer adjacent to the metal surface where ions are specifically adsorbed. This is followed by a secondary layer composed of solvated ions that are less tightly bound. Beyond these, there exists an outer diffuse layer, wherein the concentration of charge is distributed and diminishes progressively with increasing distance from the metal surface.

## Slide 9



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## Slide 10



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