Working in the infinite plane, consider a Poisson process of black points with intensity 1, and an independent Poisson process of red points with intensity $\lambda \ll 1$. We grow a disc around each black point until it hits the nearest red point, resulting in a random configuration A_λ, which is the union of discs centered at the black points. Next, consider a fixed disc of area n in the plane. What is the probability $p_\lambda(n)$ that this disc is completely covered by A_λ? It turns out that if $\lambda^3 n \log n = y$, then, for sufficiently large n, $e^{-8\pi^2 y} \leq p_\lambda(n) \leq e^{-\frac{2}{3}\pi^2 y}$. I'll sketch the proof of this, which reveals a rather surprising phenomenon, namely, that the obstructions to coverage occur on a wide range of scales. I'll also briefly discuss a related percolation question, which was motivated by the issue of security in wireless networks.