Why not using erosion to remove dust?

Using a small structuring element (2x2 1 iteration) will lead to some dust unfiltered

Using a big structuring element (in the example below 5x5, but also 3x3 is problematic) will erode near entirely the smallest rods

The same problem appears also when, instead of just erosion, an opening is applied.

An approach to recover pixels near "uneroded pixels" could have been taken into account (similar to the second phase of the hysteresis thresholding).