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Monica Ann Lewis* (malewi@umich.edu). *The local cohomology of a parameter ideal with respect to an arbitrary ideal.*

Let S be a complete intersection presented as R/J for R a regular ring and J a parameter ideal in R . Let I be an ideal containing J . It is well known that the set of associated primes of $H_I^i(S)$ can be infinite, but far less is known about the set of minimal primes. In 2017, Hochster and Núñez-Betancourt showed that if R has prime characteristic $p > 0$, then the finiteness of $\text{Ass } H_I^i(J)$ implies the finiteness of $\text{Min } H_I^{i-1}(S)$, raising the following question: is $\text{Ass } H_I^i(J)$ always finite? We give a positive answer when $i = 2$ but provide a counterexample when $i = 3$. The counterexample crucially requires $\text{Ass } H_I^2(S)$ to be infinite. The following question, to the best of our knowledge, is open: (under suitable hypotheses on R) does the finiteness of $\text{Ass } H_I^{i-1}(S)$ imply the finiteness of $\text{Ass } H_I^i(J)$? When S is a domain, we give a positive answer when $i = 3$. When S is locally factorial, we extend this to $i = 4$. Finally, if R has prime characteristic $p > 0$ and S is regular, we give a complete answer by showing that $\text{Ass } H_I^i(J)$ is finite for all $i \geq 0$. (Received January 09, 2020)