An Example of the Use of Pooled Standard Deviation

Scene: You are a Quality Assurance Manager at a leading fish cannery in Monterey, California. For seven years, at the same time of the year, your lab has been testing a certain species of fish for mercury. Now you decide to do some long-term statistics for the EPA and need the standard deviation of all the data sets collected. You remember from your quantitative course that you must use the pooled standard deviation, s_{pooled}.

You called down to the lab to have your technician, Mr. I. Naughtgood Kemist, send the data. The data arrives by interoffice mail but it's not as you expected. From the data table below, calculate s_{pooled} and the overall mean mercury content.

Year	Mean [Hg] (ppb)	s*	N
1	1.673	0.0052	3
2	1.015	0.0026	4
3	1.240	0.0050	7
4	2.018	0.0073	6
5	1.570	0.0028	4
6	1.482	0.0028	3
7	1.130	0.0030	4

*Notice that the sample standard deviation is not reported with the correct number of significant figures. This is often the case and is usually done to show how the least significant digit varies mathematically. It is not good practice to have more precision in your precision figure than the measurement.