



Those Pesky Side-Reactions: A Case Study on Ethics for Scientists and Engineers Developing Data in the Private Sector

Scenario A

by

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University of North Dakota

Debbie Wingate was exhausted but excited. Her work group was tasked with running bench-scale experiments to define the kinetics of a polymerization reaction Ajeci Chemicals was considering for a new polymer product line. The development of this process could result in substantial profits for Ajeci and prestige for the Polymer Research Group. Debbie had most of her pension invested in the company's stock. Her husband had done a quick estimate last night and he had figured that if they were successful in developing this product, the value of her pension plan would increase by \$75,000.

The deadline for completing the experimental work was tight. All of the group members had been working 60-hour weeks all fall in order to complete the experiments and the report. Debbie and her teammates were successful in performing the experiments and the reaction kinetics looked very favorable for a high conversion industrial process. Bill, Debbie's supervisor, had scheduled a meeting to present these results to the research manager tomorrow. Bill had made it clear to everyone that delays are not acceptable.

During the course of the experiments Debbie noticed an unusual peak on the gas chromatograph she was using to monitor reaction conversion.

How should Debbie proceed?

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During the course of the experiments Debbie noticed an unusual peak on the gas chromatograph she was using to monitor reaction conversion.

After conferring with the research manager, Bill has decided to give the group a time extension to investigate the peak. Debbie and John, another member of the group, have determined that the by-product generating this peak is: 1) not detrimental to the product specifications as currently formulated, 2) is carcinogenic when heated to 100 °F or higher (well below the melting point of the new polymer), and 3) difficult and expensive to eliminate from the final product.

How should Debbie proceed?

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Scenario C

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After conferring with the research manager, Bill has decided to give the group a time extension to investigate the peak. Debbie and John, another member of the group, have determined that the by-product generating this peak is: 1) not detrimental to the product specifications as currently formulated, 2) is carcinogenic when heated to 100 °F or higher (well below the melting point of the new polymer), and 3) difficult and expensive to eliminate from the final product.

Bill is adamant that the only information Polymer Research Group will convey to the Research Director is item 1 - it is not detrimental to the product specifications. Insubordination is grounds for dismissal at Ajeci Chemicals and the company finds a way to eliminate whistle-blowers. However, Debbie also knows that the company is required by the EPA Toxic Substances Control Act to file a report with the EPA if the material is found to be carcinogenic. Suppression of their findings appears to violate the spirit if not the actual letter of this law.

How should Debbie proceed?

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Scenario D

by

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After conferring with the research manager, Bill decides to give the group a time extension to investigate the peak. Debbie and John, another member of the group, determine that the by-product generating this peak is: 1) not detrimental to the product specifications as currently formulated, 2) is carcinogenic when heated to 100 °F or higher (well below the melting point of the new polymer), and 3) difficult and expensive to eliminate from the final product.

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Bill also insists that all documentation and evidence concerning the extraneous peak be destroyed so that no one can later claim that the company had prior knowledge of potential health risks associated with the product.

How should Debbie proceed?

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Scenario E

by

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The Polymer Research Group presents the results of their tests to the research manager. In the course of the presentation Debbie suggests that additional toxicological tests be performed to define the potential health risks from this by-product. The manager decides not to accept this recommendation. He decides that the health risks are not sufficient cause to delay product development or expend money on further testing.

How should Debbie proceed?

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Scenario F

by

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Further, because of their excellent work, all of the members of the Polymer Research group are given promotions from Engineer Class "Lowly" to Engineer Class "Ordinary," which includes a 15 percent increase in pay. They are all awarded a bonus of \$10,000 for their efforts. It is made clear to Debbie and her co-workers that these actions are tied to the development of this new product and that both the promotions and bonus will disappear if the product is not brought to market on time.

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