Response to Comment on "Pharmaceuticals, Hormones, and Other Organic Wastewater Contaminants in U.S. Streams, 1999−2000: A National Reconnaissance"

Till (*1*) raised concerns that several aspects of how we handled the data in our study (*2*) may have caused unintended bias. First, Till (*1*) considers the "median detectable concentrations" listed in Table 1 (*2*) to be misleading because "higher median concentrations than is actually the case" were suggested. We interpret this concern raised by Till (*1*) to be that some readers may misinterpret our median detectable concentration to be an overall median concentration. Our intention was to provide the reader with information that could not easily be determined independently. For example, by examining the frequency of detection (*2*), it could easily be determined that the overall median concentration was less than the reporting level for all but six compounds (those having a detection frequency of > 50%). Our goal for providing a median detectable concentration was to give a better sense of the concentrations when a particular compound was detected. Thus, we felt the combination of frequency of detection (how often a compound was found), median detectable concentration (median concentration when a compound was detected), and maximum concentration (highest concentration measured) would provide the greatest benefit to the readers. In future reports, we will modify the table headings to ensure that overall median concentration and median detectable concentration are clearly differentiated.

Till (*1*) also suggested that the boxplots provided in Figure 2 (*2*) were misleading because they ignored censored values. This is incorrect. All data for each compound, including nondetections, were used to generate the concentration distribution (boxplot). The portion of the concentration distribution below the reporting level cannot be defined and is only partially represented by estimated values (as individual circles in Figure 2). Thus, as the frequency of detection for a compound decreased (more of the concentration distribution below the reporting level) in Figure 2, the boxplot for that chemical became progressively more truncated.

The final concern raised by Till (*1*) dealt with the field blank contamination of cholesterol (a natural occurring compound) using Method 5. Till (*1*) suggests that we should have rejected reported concentrations within 10 times that found in the field blanks (a common practice when analyzing data associated with monitoring regulations) rather than the 2-fold criterion used for our research analysis. Till (*1*) concluded that because cholesterol was one of the most frequently detected compounds in our study, we overstated the extent of emerging contaminant occurrences by not properly rejecting these data. However, regardless of whether the cholesterol data from Method 5 are censored at 0.9 μg/L (10 times the median detection in three field blanks; decreases cholesterol detection from 84.3% to 35.7%) or if we disqualify the cholesterol data from Method 5, as suggested by Till (*1*), and replace it with cholesterol data from Method 4 (which did not have cholesterol detections in the field blanks and had a detection frequency of 55.3%), the overall detection frequency of organic wastewater contaminants in samples from our stream network remained at 80%. Thus, we do not feel an overestimate of the extent of emerging contaminant occurrences in the sampled streams was provided in our paper. Through our ongoing investigations, we are making progress toward coordinating practices on how data on emerging contaminants are produced by different analytical research methods, including appropriate criteria for rejecting analytical data on the basis of detections in field blanks.

Literature Cited

(1) Till, A. E. *Environ. Sci. Technol.* **2003**, *37*, 000−000.
(2) Kolpin, D. W.; Furlong, E. T.; Meyer, M. T.; Thurman, E. M.; Zaugg, S. D.; Barber, L. B.; Buxton, H. T. *Environ. Sci. Technol.* **2002**, *36*, 1202−1211.

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