

Interactive comment on “Primary and secondary sources of formaldehyde in urban atmospheres: Houston Texas region” by D. D. Parrish et al.

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We thank Dr. Olaguer for his comment. We do agree that there are direct emissions of formaldehyde (CH_2O) from flares, although they are quite small in the context of other CH_2O sources in the Houston area. The emission rates quoted by Dr. Olaguer (0.2–2.2 kg $\text{CH}_2\text{O}/\text{hr}$) are not inconsistent either with our estimate of total primary emissions from Houston area industrial facilities (317 kg $\text{CH}_2\text{O}/\text{hr}$ estimated from the emission inventory of Kim et al, 2011) or the direct measurements from three of the major facilities that we cite (45, 17 and 22 kg $\text{CH}_2\text{O}/\text{hr}$ from Mellqvist et al., 2010b). We cannot comment on whether the individual flares investigated by the SHARP campaign are or are not included in any particular emission inventory. However, it is clear that these individual flare emissions of CH_2O are one to two orders of magnitude smaller than the pri-

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mary CH_2O emissions from individual facilities, and two to three orders of magnitude smaller than the total primary CH_2O emissions from all Houston industrial facilities. Further, these total primary CH_2O industrial emissions are themselves a small fraction ($4\pm 2\%$ in our analysis) of total CH_2O sources in Houston.

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