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## Time-Dependent Exposures and the Fixed-Cohort Bias: Hwang et al. Respond

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Barnett expresses concerns about a potential bias in our article (Hwang et al. 2011) related to use of a fixed study period based on the date of delivery: on average a shorter duration of gestation among stillbirths compared to live births in combination with seasonal variation of exposure. We acknowledge the complexity of assessing effects of exposure with seasonal

variation on the risk of stillbirth and thank Barnett for his suggestion to avoid a possible bias, which he with his colleagues illustrated through simulations of a retrospective cohort study (Strand et al. 2011). We reanalyzed the data, excluding case and control subjects following Barnett's suggestion to quantify the "fixed cohort bias." This led to loss of approximately 4.7% (4,480/102,575) of the subjects. The point estimates were similar with those from the original analyses, but some confidence intervals became wider (Table 1). This shows that the role of the fixed cohort bias was minimal in our study.

*The authors declare they have no actual or potential competing financial interests.*

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**Table 1.** Adjusted ORs (95% CIs) for stillbirth by average pollutant concentrations, by trimester and for the whole pregnancy (single pollutant models), following Barnett's suggestion to address the "fixed cohort bias."

Air pollutant	All births (gestational age > 20 weeks) Model 1 <sup>a</sup>	Preterm births (gestational age < 37 weeks) Model 2 <sup>b</sup>	Term births (gestational age ≥ 37 weeks) Model 3 <sup>b</sup>
	PM <sub>10</sub> (10 µg/m <sup>3</sup> )		
1st trimester	1.02 (0.99–1.05)*	1.03 (1.00–1.07)	1.00 (0.96–1.04)
2nd trimester	0.97 (0.94–0.99)*	0.99 (0.95–1.03)*	0.95 (0.92–0.99)*
3rd trimester	0.97 (0.95–1.00)*	0.97 (0.92–1.02)	0.97 (0.92–1.02)*
Whole pregnancy	0.97 (0.95–1.02)*	1.01 (0.96–1.06)*	0.96 (0.91–1.01)*
SO <sub>2</sub> (1 ppb)			
1st trimester	1.02 (1.00–1.04)	1.04 (1.01–1.06)*	1.00 (0.97–1.03)*
2nd trimester	1.00 (0.98–1.02)	1.02 (0.99–1.04)*	0.99 (0.96–1.02)
3rd trimester	1.00 (0.98–1.02)	1.01 (0.97–1.04)	1.01 (0.97–1.04)*
Whole pregnancy	1.01 (0.99–1.03)	1.03 (1.00–1.06)	0.99 (0.97–1.02)*
NO <sub>2</sub> (10 ppb)			
1st trimester	1.01 (0.96–1.07)	1.05 (0.97–1.13)*	0.98 (0.90–1.06)
2nd trimester	0.97 (0.92–1.02)*	1.00 (0.93–1.08)*	0.95 (0.88–1.02)
3rd trimester	0.98 (0.92–1.04)	0.98 (0.89–1.08)	0.98 (0.89–1.08)*
Whole pregnancy	0.98 (0.93–1.05)*	1.02 (0.94–1.11)*	0.96 (0.88–1.05)
CO (100 ppb)			
1st trimester	1.00 (0.98–1.02)	1.00 (0.97–1.02)*	1.01 (0.98–1.04)
2nd trimester	1.00 (0.98–1.02)*	0.99 (0.96–1.01)*	1.01 (0.98–1.03)
3rd trimester	1.01 (0.99–1.03)*	0.98 (0.95–1.02)	0.98 (0.95–1.02)
Whole pregnancy	1.00 (0.98–1.02)	0.99 (0.96–1.02)*	1.01 (0.98–1.04)
O <sub>3</sub> (10 ppb)			
1st trimester	1.01 (0.96–1.06)	1.01 (0.94–1.09)*	0.99 (0.92–1.06)
2nd trimester	0.96 (0.91–1.01)	1.01 (0.94–1.08)*	0.92 (0.85–0.98)*
3rd trimester	0.99 (0.93–1.04)*	0.98 (0.90–1.08)*	0.98 (0.90–1.08)*
Whole pregnancy	0.97 (0.91–1.04)	1.01 (0.92–1.11)*	0.94 (0.85–1.03)*

Abbreviations: CO, carbon monoxide; NO<sub>2</sub>, nitrogen dioxide; O<sub>3</sub>, ozone; PM<sub>10</sub>, particulate matter ≤ 10 µm in aerodynamic diameter; SO<sub>2</sub>, sulfur dioxide.

<sup>a</sup>Logistic regression analysis adjusting for sex, maternal age, gestational age, municipal-level socioeconomic status (SES), season of conception, and year of birth. <sup>b</sup>Logistic regression analysis adjusting for sex, maternal age, municipal-level SES, season of conception, and year of birth. \*Point estimates were similar with those from the original analyses, but some confidence intervals were wider.

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## DDT Paradox

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Bouwman et al. (2011) characterized anti-DDT, centrist-DDT and pro-DDT positions, and stated that they "could find no current outright anti-DDT activities." This conclusion is false and misleading.

Several activist groups currently promote an anti-DDT agenda, routinely hyping supposed human health and environmental harm from DDT and ignoring studies that find no association between DDT and such harm. For instance, the description of Biovision's "Stop DDT" project states that "Biovision is engaged to achieve a worldwide ban on DDT" (Biovision 2011). Such a statement could be ignored if it were not for the fact that Hans Herren, president of Biovision, was a member of the Stockholm Convention's DDT Expert Group, as were two of the authors of Bouwman et al. (2011)—Bouwman and van den Berg. Furthermore, Bouwman et al. ignored the Secretariat of the Stockholm Convention's promotion of an arbitrary deadline for cessation of DDT production by 2020 (United Nations Environment Programme 2007). The Secretariat's promotion of this deadline undermines use and production of DDT and is *ultra vires*, because the convention excludes any deadline.

In identifying the "pro-DDT" faction, Bouwman et al. (2011) attempted to characterize it as a minority view while ignoring national malaria control programs and ministers of health who repeatedly proclaim the importance of DDT for disease control programs in countries with high incidence of malaria. Indeed, the Southern African Development Community (SADC) Ministers of Health agreed at their November 2010 meeting that DDT was still required (SADC 2011). In addition, at the recent fifth meeting of the Conference of Parties to the Stockholm Convention, Namibia and the