

## Sex Ratio at Birth of Offspring of the Researchers in a Chemical Institute.

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**Introduction:** Male portion of children (Sex ratio) at birth was declined in two cases of paternal exposure to dioxin<sup>1,2</sup>. It is interesting whether the other chemicals than dioxin will affect to the sex ratio at birth or not. The National Institute of Materials and Chemical Research which had served 100 years for chemical R&D of Japan since June of 1900, until March 2001 when the system was drastically changed. The offspring of the researchers who have worked in this institute were subjected to the analysis.

**Method:** Inquiry letters were sent to the present and former employees during 2000. The answer was collected on the voluntary basis. In the analysis the women researchers and general officers were excluded, because the answers were very few (less than 4%). The data was analyzed by the use of the global equation representing the normal sex ratio and the normalized sex ratio (NSR), which was presented in the last conference<sup>3</sup>.

**Results:** Among 219 father researcher younger than 60 years old in 2000 100 answered (45.7%). They have 107 male and 115 female children (SR= 0.482, CI=0.450-0.582). The researcher who did not answer have 105 male and 124 female children, then the SR was 0.459 (CI=0.451-0.581). The 98 retired have 112 male and 105 female children (SR= 0.516, CI=0.449-0.583). The decline of SR among children born in 1970s and the increase of SR among children born to youngest fathers (younger than 40 years old) were seen. It is necessary to include the researchers who did not answer in this study for the further investigation.

Age (Father)	Male child	Female child	SR (95%CI)	NSR
<40	24	13	0.649 (0.355-0.677)	0.82
41-50	34	44	0.436 (0.405-0.627)	-0.72
51-60	48	57	0.457 (0.420-0.612)	-0.62
61-70	47	46	0.505 (0.414-0.620)	-0.10
71-84	65	59	0.524 (0.428-0.606)	0.09

Children			Chemical Institute		Reference area <sup>4</sup>	
Birth date	Male	Female	Sex Ratio (95%CI)	NSR	Sex Ratio	NSR
before '49	5	3				
'50-759	29	32	0.475 (0.391-0.641)	-0.32	0.515	-0.45
'60-69	56	48	0.538 (0.420-0.612)	0.23	0.516	-0.04
'70-79	53	69	0.434 (0.427-0.605)	-0.92	0.516	-0.03
'80-89	41	37	0.526 (0.405-0.627)	0.09	0.508	-0.58
'90-99	28	25	0.528 (0.381-0.651)	0.09	0.515	-0.08
after 2000	5	5				

<sup>1</sup>Mocarelli P, Gerthoux PM, et al, Lancet 355, 1858-1863 (2000).

<sup>2</sup>Ryan JJ and Amirova Z., Organohalogen Compounds 53, 37-40 (2001).

<sup>3</sup>Matsuzaki SY, and Yamazaki M, Environm. Sci. 8, 115-116 (2001).

<sup>4</sup>Tokyo Metropolitan is assigned before 1 979 and Tsukuba city after 1980.