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International Journal of Occupational and Environmental Medicine [Open Access](#)  
Volume 9, Issue 3, July 2018, Pages 137-144

## Pesticide exposure and thyroid function in elementary school children living in an agricultural area, Brebes District, Indonesia

(Article) [Open Access](#)

**Suhartono, S.<sup>a</sup>** Kartini, A.<sup>b</sup>, Subagio, H.W.<sup>c</sup>, Budiyo<sup>a</sup>, Utari, A.<sup>d</sup>, Suratman, S.<sup>e</sup>, Sakundarno, M.<sup>f,g</sup>

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### Abstract

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**Background:** Children living in agricultural areas are at risk of exposure to pesticides due to their involvement in agricultural activities. Pesticides are one of the chemicals classified as endocrine disrupting chemicals. **Objective:** To examine the association between exposure to organophosphate pesticides and the occurrence of thyroid dysfunction in children. **Methods:** This cross-sectional study was conducted on 66 children in two elementary schools located in an agricultural area in Brebes District, Indonesia, in 2015. To determine the pesticide exposure history, we analyzed urine samples and completed a questionnaire. Meanwhile, thyroid function tests were performed. **Results:** Organophosphate pesticide metabolites were detected in urine samples of 15 (23%) of 66 children. Thyroid stimulating hormone (TSH) levels  $>4.5 \mu\text{IU/mL}$  were detected in 24 (36%) children. Free thyroxine (FT4) levels of all participants were normal. The mean TSH level in children with positive urinary organophosphate pesticide metabolites ( $7.74 \mu\text{IU/mL}$ ) was significantly ( $p=0.005$ ) higher than that in those who were negative ( $4.34 \mu\text{IU/mL}$ ). The prevalence of hypothyroidism in children with positive urinary organophosphate pesticide metabolites (67%) was significantly higher than that in those who were negative (27%; PR 2.4, 95% CI 1.4 to 4.3). **Conclusion:** A history of pesticide exposure could be used as a risk factor for the occurrence of thyroid dysfunction in children living in agricultural areas. © 2018, NIOC Health Organization. All rights reserved.

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Londoño, Á.L. , Restrepo, B. , Sánchez, J.F.

(2018) *Revista de Salud Publica*

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long acting thyroid stimulator, 9034-48-4; thyrotropin, 9002-71-5;

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1 Budiyono, S., Kartini, A.  
Pesticide Metabolites, Anti-Thyroid Peroxidase and Thyroid Stimulating Hormone Status in School Children: A Preliminary Study in Agriculture Areas in Indonesia  
(2015) *Int J Sci Basic Appl Res*, 22, pp. 1-12. Cited 4 times.

---

2 Diamanti-Kandarakis, E., Bourguignon, J.-P., Giudice, L.C., Hauser, R., Prins, G.S., Soto, A.M., Zoeller, R.T., (...), Gore, A.C.

### Endocrine-disrupting chemicals: An Endocrine Society scientific statement

([Open Access](#))

(2009) *Endocrine Reviews*, 30 (4), pp. 293-342. Cited 2063 times.

<http://edrv.endojournals.org/cgi/reprint/30/4/293>

doi: 10.1210/er.2009-0002

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---

3 Crofton, K.M., Paul, K.B., DeVito, M.J., Hedge, J.M.

### Short-term in vivo exposure to the water contaminant triclosan: Evidence for disruption of thyroxine

(2007) *Environmental Toxicology and Pharmacology*, 24 (2), pp. 194-197. Cited 156 times.

doi: 10.1016/j.etap.2007.04.008

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---

4 Costa, L.G.

Toxic effects of pesticides

(2008) *Casarett and Doull's Toxicology: The Basic Science of Poisons*, pp. 883-930. Cited 54 times.

Klaassen CD, ed., 8th ed. New York, McGraw-Hill Education

---

5 Lacasaña, M., López-Flores, I., Rodríguez-Barranco, M., Aguilar-Garduño, C., Blanco-Muñoz, J., Pérez-Méndez, O., Gamboa, R., (...), Cebrian, M.E.

### Association between organophosphate pesticides exposure and thyroid hormones in floriculture workers

(2010) *Toxicology and Applied Pharmacology*, 243 (1), pp. 19-26. Cited 59 times.

doi: 10.1016/j.taap.2009.11.008

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---

6 Desai, M.P.

### Thyroid function in children

(2011) *Journal of Association of Physicians of India*, 59 (SUPPL JAN2011), pp. 35-42. Cited 3 times.

[http://www.japi.org/thyroid\\_special\\_jan\\_issue\\_2011/thyroid%20function%20in%20children.pdf](http://www.japi.org/thyroid_special_jan_issue_2011/thyroid%20function%20in%20children.pdf)

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---

7 Suhartonodjokomoeljanto, R., Hadisaputro, S.

[Pesticides exposure and risk factor of hypothyroidism in women childbearing in the agricultural area, Indonesia (In Bahasa)]

(2012) *Media Med Indones*, 46, pp. 91-99. Cited 2 times.

---

8 Goiter. Published 2016, Accessed December 13, 2016

[www.thyroid.org](http://www.thyroid.org)

---

- 
- 9 *Iodine Deficiency*. Cited 7 times.  
Published 2014, Accessed December 13, 2016  
[www.thyroid.org](http://www.thyroid.org)
- 
- 10 Schug, T.T., Janesick, A., Blumberg, B., Heindel, J.J.  
**Endocrine disrupting chemicals and disease susceptibility**  
(2011) *Journal of Steroid Biochemistry and Molecular Biology*, 127 (3-5), pp. 204-215. Cited 489 times.  
doi: 10.1016/j.jsbmb.2011.08.007  
  
View at Publisher
- 
- 11 (2014) *Good Policy and Practice in Health Education: Puberty Education & Menstrual Hygiene Management*. Cited 7 times.  
Paris, UNESCO
- 
- 12 (1993) *Pesticides in the Diets of Infants and Children*. Cited 927 times.  
National Academies Press
- 
- 13 Bravo, R., Caltabiano, L.M., Weerasekera, G., Whitehead, R.D., Fernandez, C., Needham, L.L., Bradman, A., (...), Barr, D.B.  
**Measurement of dialkyl phosphate metabolites of organophosphorus pesticides in human urine using lyophilization with gas chromatography-tandem mass spectrometry and isotope dilution quantification** ([Open Access](#))  
(2004) *Journal of Exposure Analysis and Environmental Epidemiology*, 14 (3), pp. 249-259. Cited 121 times.  
doi: 10.1038/sj.jea.7500322  
  
View at Publisher
- 
- 14 Stone, M.B., Wallace, R.B.  
(2003) *Medicare Coverage of Routine Screening for Thyroid Dysfunction*. Cited 21 times.  
Washington DC, The National Academic Press
- 
- 15 Karmisholt, J., Andersen, S., Laurberg, P.  
**Variation in thyroid function tests in patients with stable untreated subclinical hypothyroidism**  
(2008) *Thyroid*, 18 (3), pp. 303-308. Cited 57 times.  
doi: 10.1089/thy.2007.0241  
  
View at Publisher
- 
- 16 Hollowell, J.G., Staehling, N.W., Dana Flanders, W., Harry Hannon, W., Gunter, E.W., Spencer, C.A., Braverman, L.E.  
**Serum TSH, T<sub>4</sub>, and thyroid antibodies in the United States population (1988 to 1994): National Health and Nutrition Examination Survey (NHANES III)** ([Open Access](#))  
(2002) *Journal of Clinical Endocrinology and Metabolism*, 87 (2), pp. 489-499. Cited 2366 times.  
<http://jcem.endojournals.org>  
doi: 10.1210/jcem.87.2.8182  
  
View at Publisher
-

- 17 Ramzan, M., Ali, I., Ramzan, F., Ramzan, F., Ramzan, M.H.  
Prevalence of sub clinical hypothyroidism in school children (6-11 years) of dera Ismail Khan  
(2012) *Journal of Postgraduate Medical Institute*, 26 (1), pp. 22-28.  
<http://www.jpmi.org.pk/index.php/jpmi/article/view/1208/1116>
- 
- 18 Salerno, M., Capalbo, D., Cerbone, M., De Luca, F.  
Subclinical hypothyroidism in childhood-current knowledge and open issues  
(2016) *Nature Reviews Endocrinology*, 12 (12), pp. 734-746. Cited 30 times.  
<http://www.nature.com/nrendo/index.html>  
doi: 10.1038/nrendo.2016.100  
  
View at Publisher
- 
- 19 Kaplowitz, P.  
Subclinical hypothyroidism in children: Normal variation or sign of a failing thyroid gland?  
(2010) *Int J Pediatr Endocrinol*, 2010. Cited 39 times.
- 
- 20 Rodondi, N., Bauer, D.C.  
Subclinical hypothyroidism and cardiovascular risk: How to end the controversy  
(Open Access)  
(2013) *Journal of Clinical Endocrinology and Metabolism*, 98 (6), pp. 2267-2269. Cited 24 times.  
<http://jcem.endojournals.org/content/98/6/2267.full.pdf+html>  
doi: 10.1210/jc.2013-1875  
  
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- 
- 21 Gencer, B., Collet, T.-H., Virgini, V., Auer, R., Rodondi, N.  
Subclinical thyroid dysfunction and cardiovascular outcomes among prospective cohort studies  
(2013) *Endocrine, Metabolic and Immune Disorders - Drug Targets*, 13 (1), pp. 4-12. Cited 45 times.  
doi: 10.2174/1871530311313010003  
  
View at Publisher
- 
- 22 Klaassen, C.  
Principles of toxicology  
(1986) *Toxicology. the Basic Science of Poisons*, pp. 11-32. Cited 324 times.  
Casarett L, Doull C, eds., 3rd ed. New York, Macmillan Publishing Company
- 
- 23 Muñoz-Quezada, M.T., Iglesias, V., Lucero, B., Steenland, K., Barr, D.B., Levy, K., Ryan, P.B., (...), Concha, C.  
Predictors of exposure to organophosphate pesticides in schoolchildren in the Province of Talca, Chile  
(2012) *Environment International*, 47, pp. 28-36. Cited 40 times.  
[www.elsevier.com/locate/envint](http://www.elsevier.com/locate/envint)  
doi: 10.1016/j.envint.2012.06.002  
  
View at Publisher
-

- 24 Toft, G., Flyvbjerg, A., Bonde, J.P.  
Thyroid function in Danish greenhouse workers ([Open Access](#))  
(2006) *Environmental Health: A Global Access Science Source*, 5, art. no. 32. Cited 26 times.  
<http://www.ehjournal.net/content/pdf/1476-069X-5-32.pdf>  
doi: 10.1186/1476-069X-5-32  
[View at Publisher](#)
- 
- 25 Zaidi, S.Sa., Bhatnagar, V.K., Gandhi, S.J., Shah, M.P., Kulkarni, P.K., Saiyed, H.N.  
Assessment of thyroid function in pesticide formulators  
(2000) *Human and Experimental Toxicology*, 19 (9), pp. 497-501. Cited 42 times.  
doi: 10.1191/096032700677928536  
[View at Publisher](#)
- 
- 26 Lal, B., Sarang, M.K., Kumar, P.  
Malathion exposure induces the endocrine disruption and growth retardation in the catfish, *Clarias batrachus* (Linn.)  
(2013) *General and Comparative Endocrinology*, 181 (1), pp. 139-145. Cited 25 times.  
<http://www.sciencedirect.com/science/journal/00166480>  
doi: 10.1016/j.ygcen.2012.11.004  
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- 
- 27 Gore, A., Crews, D., Doan, L.  
(2014) *Introduction to Endocrine Disrupting Chemicals (Edcs)-A Guide for Public Interest Organizations and Policy-Makers*. Cited 37 times.  
Endocrine Society
- 
- 28 Piccoli, C., Cremonese, C., Koifman, R.J., Koifman, S., Freire, C.  
Pesticide exposure and thyroid function in an agricultural population in Brazil  
(2016) *Environmental Research*, 151, pp. 389-398. Cited 28 times.  
<http://www.elsevier.com/inca/publications/store/6/2/2/8/2/1/index.htm>  
doi: 10.1016/j.envres.2016.08.011  
[View at Publisher](#)
- 
- 29 Boas, M., Feldt-Rasmussen, U., Skakkebaek, N.E., Main, K.M.  
Environmental chemicals and thyroid function ([Open Access](#))  
(2006) *European Journal of Endocrinology*, 154 (5), pp. 599-611. Cited 337 times.  
doi: 10.1530/eje.1.02128  
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- 
- 30 Wade, M.G., Parent, S., Finnson, K.W., Foster, W., Younglai, E., McMahon, A., Cyr, D.G., (...), Hughes, C.  
Thyroid toxicity due to subchronic exposure to a complex mixture of 16 organochlorines, lead, and cadmium ([Open Access](#))  
(2002) *Toxicological Sciences*, 67 (2), pp. 207-218. Cited 107 times.  
doi: 10.1093/toxsci/67.2.207  
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-



□ 31 Bianco, A.C., Salvatore, D., Gereben, B., Berry, M.J., Larsen, P.R.

Biochemistry, cellular and molecular biology, and physiological roles of the  
iodothyronine selenodeiodinases (Open Access)

(2002) *Endocrine Reviews*, 23 (1), pp. 38-89. Cited 1222 times.

<https://academic.oup.com/edrv/issue>

doi: 10.1210/edrv.23.1.0455

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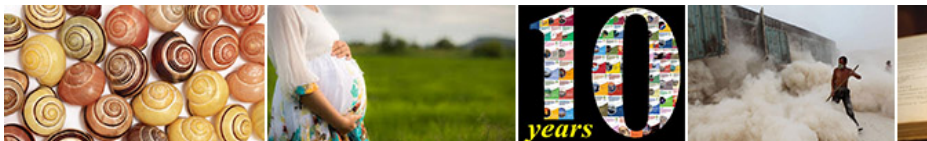
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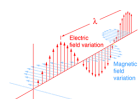
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Home > Archives > Vol 9, No 3 July (2018)

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- From April to May, 2018, mushroom poisoning took lives of 19 in west and northwestern provinces of Iran. (see the [Article](#))



### Table of Contents

#### Original Articles



[Mercury-induced Oxidative Stress May Adversely Affect Pregnancy Outcome among Dental Staff: A Cohort Study](#)

Aziza El-Badry, Mohamed Rezk, Hanan El-Sayed

[FULL TEXT \(HTML\)](#) [PDF](#)

[922 KB] [EPUB](#)

PII 1181, pp 113-9



[Dose-response of Cotton Dust Exposure with Lung Function among Textile Workers: MultiTex Study in Karachi, Pakistan](#)

Naureen Akber Ali, Asaad Ahmed Nafees, Zafar Fatmi, Syed Iqbal Azam

[FULL TEXT \(HTML\)](#) [PDF](#)

[499 KB] [EPUB](#)

PII 1191, pp 120-8



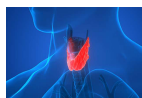
[Association between the Increase in Body Mass Index and Medical Absenteeism in a Peruvian Mining Population](#)

Raúl Gomero, Ludy Murguía, Livia Calizaya, Christian R Mejia, Arnaldo Sánchez-B

[FULL TEXT \(HTML\)](#) [PDF](#)

[993 KB] [EPUB](#)

PII 1201, pp 129-36



[Pesticide Exposure and Thyroid Function in Elementary School Children Living in an Agricultural Area, Brebes District, Indonesia](#)

Suhartono Suhartono, Appina Kartini, Hertanto Wahyu Subagio, Budiyo Budiyo, Agustini Utari, Suratman Suratman, Mateus Sakundarno

[FULL TEXT \(HTML\)](#) [PDF](#)

[450 KB] [EPUB](#)

PII 1207, pp 137-44



[Aberrant DNA Methylation of Two Tumor Suppressor Genes, p14<sup>ARF</sup> and p15<sup>INK4b</sup>, after Chronic Occupational Exposure to Low Level of Benzene](#)

Iraj Jamebozorgi, Tayebah Majidzadeh, Gholamreza Pouryagoub, Frouzandeh Mahjoubi

[FULL TEXT \(HTML\)](#) [PDF](#)

[750 KB] [EPUB](#)

PII 1317, pp 145-51

#### Case Reports/Case Series



[Outbreak of Mushroom Poisoning in Iran: April–May, 2018](#)

Kambiz Soltaninejad

[FULL TEXT \(HTML\)](#) [PDF](#)

[1.57 MB] [EPUB](#)

PII 1380, pp 152-6

#### Letter to the Editor



[Comments on the Measurement of Lung Cancer Tumor Markers in Workers of a Glass Wool Company](#)

Gary M Marsh, Autumn Bernal, Natalie Suder Egnot, Marisa Kreider, Shabnam Abtahi, Mahyar Malekzadeh, Ghafour Nikravan, Abbas Ghaderi

[FULL TEXT \(HTML\)](#) [PDF](#)

[309 KB] [EPUB](#)

PII 1356, pp 157-9



[Upcoming Meetings](#)

[FULL TEXT \(HTML\)](#) [PDF](#)

[199 KB] [EPUB](#)

PII 1402, pp 160



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[RSS](#) 2.0  
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GUIDELINES SUBMISSION

Home > Vol 9, No 3 July (2018) > **Suhartono**



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EBSCO - Full Text Views: 88  
EBSCO - Link-outs: 15

#### Captures

EBSCO - Exports-Saves: 10  
Mendeley - Readers: 20  
Mendeley - Readers: 18

[see details](#)

## Pesticide Exposure and Thyroid Function in Elementary School Children Living in an Agricultural Area, Brebes District, Indonesia

**Suhartono Suhartono, Apoina Kartini, Hertanto Wahyu Subagio, Budiyo Budiyo, Agustini Utari, Suratman Suratman, Mateus Sakundarno**

### Abstract

**Background:** Children living in agricultural areas are at risk of exposure to pesticides due to their involvement in agricultural activities. Pesticides are one of the chemicals classified as endocrine disrupting chemicals.

**Objective:** To examine the association between exposure to organophosphate pesticides and the occurrence of thyroid dysfunction in children.

**Methods:** This cross-sectional study was conducted on 66 children in two elementary schools located in an agricultural area in Brebes District, Indonesia, in 2015. To determine the pesticide exposure history, we analyzed urine samples and completed a questionnaire. Meanwhile, thyroid function tests were performed.

**Results:** Organophosphate pesticide metabolites were detected in urine samples of 15 (23%) of 66 children. Thyroid stimulating hormone (TSH) levels >4.5  $\mu\text{IU/mL}$  were detected in 24 (36%) children. Free thyroxine (FT4) levels of all participants were normal. The mean TSH level in children with positive urinary organophosphate pesticide metabolites (7.74  $\mu\text{IU/mL}$ ) was significantly ( $p=0.005$ ) higher than that in those who were negative (4.34  $\mu\text{IU/mL}$ ). The prevalence of hypothyroidism in children with positive urinary organophosphate pesticide metabolites (67%) was significantly higher than that in those who were negative (27%; PR 2.4, 95% CI 1.4 to 4.3).

**Conclusion:** A history of pesticide exposure could be used as a risk factor for the occurrence of thyroid dysfunction in children living in agricultural areas.

### Keywords

Pesticides; Thyroid function test; Child; Agriculture; Indonesia; Organophosphates; Hypothyroidism

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