






WULAN KOAGOUW



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 13-05-1986  <https://orcid.org/0000-0001-6387-5232>

SKILLS

- Ecotoxicology research methods and techniques
- Planning, designing and conducting ecotoxicological exposure experiments
- Interpreting quantitative and qualitative data
- Statistical data analysis
- Writing and publishing research
- Public speaking
- Health and safety risk assessment
- Ethical review
- Sample collection in the field
- Chemical analysis of seawater and freshwater
- Solid phase extraction of seawater
- LC/MS analysis
- Heavy metal analyses of mussels
- Histology
- Cytology
- Transcriptomics
- Gamete and larval bioassay
- Lysosomal membrane stability assay
- RNA and DNA extraction qPCR
- RNA-Seq

PROFILE

- Passionate and skilled biologist with an outstanding academic track record and extensive experience across a number of environmental research projects
- Highly adept in major techniques in the molecular biology laboratory setting (DNA, RNA, transcriptomics analysis) as well as in ecotoxicology and analytical chemistry research methods
- Looking forward to obtaining a higher professional qualification in the field of ecotoxicology

EXPERIENCE

RESEARCH FELLOW

University of Brighton / 2021-2022

- Planned, designed and conducted the experiments and analyses of the REDPOL project for the European Commission - Interreg, including the budgeting, procurement, and dissemination of the project results.
- Wrote reports and presented the results of the research in seminars and conferences.

RESEARCH SCIENTIST

National Research and Innovation Agency (BRIN) / Jakarta, Indonesia 2014 - Present

- Planned, designed and conducted various research projects, particularly in marine biology, for BRIN, a scientific authority holder in Indonesia.
- Presented the results of the research in seminars and conferences and disseminated it in peer-reviewed national and international publications.
- Wrote, proofread and submitted reports on time and as per Indonesian government specifications, as well as providing recommendations to the government, both local and national, in formulating policies.
- Extensive experience in both field and laboratory work.

LABORATORY QUALITY CONTROL SUPERVISOR

PT. Tirta Investama / Manado, Indonesia / 2010

Led the laboratory division to conduct microbiological and chemical analysis on all product samples. Examined and assured the accuracy of the test results of product samples through quality system compliance

LABORATORY ANALYST

PT. Water Laboratory Nusantara Indonesia / Manado, Indonesia / 2008 - 2010

Conducted microbiology and chemical analysis on samples in accordance with company SOPs and ISO 17025/2005.

EDUCATION

2020

Brighton, United Kingdom

Ph.D - Ecotoxicology

University of Brighton

Thesis Title: Human Pharmaceuticals in the Marine Environment: Evidence of occurrence, direct impact and potential ecotoxicological effects on blue mussels, *Mytilus edulis*

2016

Brighton, United Kingdom

M.Res - Biosciences

University of Brighton

Thesis Title: Biological responses in mussels (*Mytilus edulis* Linnaeus, 1758) exposed to high temperature and metformin under laboratory conditions.

2008

Manado, Indonesia

B.Sc - Biology

Sam Ratulangi University

- Graduated as the best student in the Faculty of Mathematics and Natural Sciences (2008) with a GPA of 3.91/4
- Won the award for the Best Student - Sam Ratulangi University

OTHER SCIENTIFIC & ACADEMIC EXPERIENCE

- Supervision of a total of 1 MRes, 6 final year undergraduate project students, and 3 internship students.
- Scientific reviewer for international peer-review journals: Environmental Science and Pollution Research (ESPR) (2021), Environmental Toxicology and Chemistry ET&C) (2020), IOP Conference Series: Earth and Environmental Science (2020).

RESEARCH PROJECTS

- ECOSIC (as Principal Investigator), a project researching the occurrence of pharmaceuticals and emerging pollutants in Jakarta waters, funded by National Geographic. <https://www.wulankoagouw.com/ecosic>
- ECOWAR (as Principal Investigator), a project investigating the presence of emerging contaminants in Jakarta waters, funded by University of Brighton. <https://www.wulankoagouw.com/ecowar>
- Reduction of Pollution by endocrine disrupting compounds at source: innovative products for the commercial lab market (RedPol). An Interreg project funded by European Regional Development Fund for the consortium of French (Université Le Havre, Université de Caen, Toxem) and British (University of Portsmouth, University of Brighton, and Chichester Harbour Conservancy) partners.
- Integrative assessment of marine pollution - Impact of pharmaceuticals on marine bivalves (PhD project). University of Brighton.
- China-Indonesia ecological station establishment and marine biodiversity investigation in North Sulawesi Sea, a collaborative research between The Third Institute of Oceanography (TIO), State Oceanic Administration (SOA) - China and Research Center for Oceanography (RCO), Indonesian Institute of Sciences (LIPI).
- Seagrass biodiversity and its inhabitants in Bitung waters and Southern Minahasa, North Sulawesi. Indonesian Institute of Sciences.
- Stock assessment and ecology of Banggai cardinal fish (*Pterapogon kauderni*) in Lembeh Strait, Bitung, North Sulawesi. Indonesian Institute of Sciences.
- Conservation of Indonesian coelacanth fish (*Latimeria menadoensis*), the living fossil, a collaborative project between Aquamarine Fukushima - Japan, Sam Ratulangi University, and Indonesian Institute of Sciences.

CONFERENCES & TALKS

- Forum Group Discussion "Managing Protection and Maintenance of Surface Water and Seawater Quality" (invited key speaker), organised by Jakarta city government. 24 May 2022.
- Variations in the mRNA expression after short- and long-term exposure to metformin on adult marine mussels. SETAC Europe 32nd Annual Meeting. Copenhagen, Denmark. 15-19 May 2022. <https://europe2022.setac.org/>
- Research Career in the Academia (invited key speaker). Student Career Event organised by University of Brighton. 21 March 2022.
- Deep Dive into the Journey of Women in Ocean Science (invited key speaker). Organised by Japan Society for the Promotion of Science (JSPS) and Collaborative Research and Education Project in Southeast Asia for Sustainable Use of Marine Ecosystems (CREPSUM). 12 October 2021. https://jpsps-th.org/jpsps_en/2021/10/12/3374/
- Press conference on "Pharmaceutical Waste in Jakarta Bay" (invited key speaker), organised by National Research and Innovation Agency (BRIN) - Republic of Indonesia. 2 October 2021.
- Group Discussion Series on "Paracetamol in Jakarta Bay" (invited key speaker), organised by Jakarta city government. October 2021 - May 2022.
- Alterations in the gonads of blue mussels *Mytilus edulis* exposed to paracetamol. SETAC North America 40th Annual Meeting. Toronto, Canada, 3-7 Nov 2019. <https://toronto.setac.org/>
- Evaluation of reproduction-related genes as possible targets of paracetamol in the blue mussel, *Mytilus edulis*. SETAC Latin America 13th Biennial Meeting. Cartagena, Colombia, 15-18 Sep 2019. <https://sla2019.setac.org/>
- Induction of apoptosis in the gonads of *Mytilus edulis* by metformin and increased temperature, via regulation of *CASP8*, *HSP70*, *BCL2* and *FAS*. SETAC Europe 29th Annual Meeting. Helsinki, Finland, 26-30 May 2019. <https://helsinki.setac.org/>
- Seagrass fishes of coastal area of the Lembeh strait, Bitung, North Sulawesi and surroundings. International Seminar on Biodiversity and Coastal Ecosystem on North Sulawesi. Jakarta, Indonesia, October 2015.

PROFESSIONAL MEMBERSHIP

- National Ocean Decade Committee Republic of Indonesia
- Member of the Society of Environmental Toxicology and Chemistry (SETAC)

TRAINING & COURSES

- Sciencetelling Bootcamp: Public Speaking. National Geographic Society (2022)
- Intersex in Bivalves (*Scrobicularia* sp.). A research visit and training at Universite Le Havre du Normandie, France, under supervision of Prof. Christophe Minier (2022)
- Histology-Based Rapid Reproductive Analyses of Tropical Fishes. University of Hawai'i (2021)
- Patent and Intellectual Property Rights. Indonesian Institute of Sciences (2020)
- The Teaching and Learning in Higher Education (TLHE). The Centre for Learning and Teaching - University of Brighton (2020)
- Statistical Issues in the Design and Analysis of Ecotox Experiments. SETAC North America, Toronto, Canada (2019)
- The Endocrine System: Global Perspectives on Testing Methods and Evaluation of Endocrine Activity. SETAC Europe, Helsinki, Finland (2019)
- Creating an Effective Research Poster. Doctoral College - University of Brighton (2019)
- Gamete and Larval Bioassay Techniques. Observatoire océanologique de Banyuls-sur-Mer (Laboratoire Arago), France (2018)
- Compressed and Cryogenic Gases Safety Training. Proactive Gas Safety (PGS) (2017)
- Presenting at Conference. Doctoral College - University of Brighton (2017)
- Research Ethics and Governance. Doctoral College - University of Brighton (2017)
- Systematic Literature Review, Meta Synthesis of the Literature. Doctoral College - University of Brighton (2017)
- Successful Literature Searching. Doctoral College - University of Brighton (2017)
- Taxonomy of Marine Biota. Indonesian Institute of Sciences, Jakarta, Indonesia (2014)
- Sampling of Water and Sediments. Water Laboratory Nusantara, Manado, Indonesia (2009)
- Introduction to Microbiological Analysis. Waterlaboratorium Noord, Glimmen, Netherland (2009)
- Laboratory Training ISO/IEC 17025:2005. Water Laboratory Nusantara, Manado, Indonesia (2009)

COMPETITIVE AWARDS & GRANTS

- National Geographic Grant for Science and Exploration, value of USD 19997, funded by National Geographic Society for the project ECOSIC, researching the occurrence of pharmaceuticals and emerging pollutants in Jakarta waters (2022).
- Research Investment Fund, value of GBP 4995, from School of Applied Sciences, University of Brighton for the project ECOWAR, investigating the presence of emerging contaminants in Jakarta waters (2022).
- Research funding, value of GBP 1500, funded by the Centre for Aquatic Environments, University of Brighton for the project ECOWAR (2022).
- PhD Student Award, a competitive award from the Society of Environmental Toxicology and Chemistry given to outstanding PhD students to present their research at SETAC North America 40th Annual Meeting, Toronto, Canada (2019).
- Research and Innovation in Science and Technology Project (RISET-Pro) Award for PhD degree, funded by Ministry of Research, Technology, and Higher Education, Republic of Indonesia (2017).
- Chevening Award for Masters degree, funded by the Foreign and Commonwealth Office (FCO), UK (2015).
- 1st place, Best Student Competition, Sam Ratulangi University (2008) (from a student body of over 20,000).
- 3rd place at national level, National Scientific Writing Competition, Ministry of Education, Republic of Indonesia (2007).
- Finalist at national level, National Biology Olympiad, Ministry of Education, Republic of Indonesia (2002).

PUBLICATIONS

- Metals in green mussels: is there any effect on their reproduction? A preliminary study of Muara Angke, Jakarta Bay. **Wulan Koagouw**, N L P R Phadmacanty, M R Iskandar, D Hindarti and Z Arifin. IOP Conference Series: Earth and Environmental Science (2022), 1027, 012004. <https://iopscience.iop.org/article/10.1088/1755-1315/1027/1/012004>
- Induction of apoptosis in the gonads of *Mytilus edulis* by metformin and increased temperature, via regulation of HSP70, CASP8, BCL2 and FAS. **Wulan Koagouw**, Richard J. Hazell, Corina Ciocan. Marine Pollution Bulletin (2021), 173, Part A, [113011]. <https://doi.org/10.1016/j.marpolbul.2021.113011>.
- High concentrations of paracetamol in effluent dominated waters of Jakarta Bay, Indonesia. **Wulan Koagouw**, Zainal Arifin, George W Olivier, Corina Ciocan. Marine Pollution Bulletin (2021), 169, [112558]. <https://doi.org/10.1016/j.marpolbul.2021.112558>
- Long-term exposure of marine mussels to paracetamol: is time a healer or a killer?. **Wulan Koagouw**, Nicolas Stewart, Corina Ciocan. Environmental Science and Pollution Research (2021), 1-14. <https://doi.org/10.1007/s11356-021-14136-6>
- Effects of short-term exposure of paracetamol in the gonads of blue mussels *Mytilus edulis*. **Wulan Koagouw**, Corina Ciocan. Environmental Science and Pollution Research (2020), 27, 30933-30944. <https://doi.org/10.1007/s11356-019-06861-w>
- Impact of metformin and increased temperature on blue mussels *Mytilus edulis* - Evidence for synergism. **Wulan Koagouw**, Corina Ciocan. Journal of Shellfish Research (2018), 37(3), 467-474. <https://doi.org/10.2983/035.037.0301>
- Food sources and trophic structure of fishes and benthic macroinvertebrates in a tropical seagrass meadow revealed by stable isotope analysis. Jianguo Du, Xinqing Zheng, Teguh Peristiwady, Jianji Liao, Petrus Ch. Makatipu, Xijie Yin, Wenjia Hu, **Wulan Koagouw**, Bin Chen. Marine Biology Research (2016), 12:7, 748-757. <https://doi.org/10.1080/17451000.2016.1183791>
- *Meganthias kingyo* (Kon, Yoshino and Sakurai, 2000) (Perciformes: Serranidae) from Bitung, North Sulawesi, Indonesia: First record from the southwestern Pacific ocean. Teguh Peristiwady, **Wulan Koagouw**, Jianguo Du, Petrus Christianus Makatipu. Marine Research Indonesia (2016), 40(2):41. <https://doi.org/10.14203/mri.v40i2.74>
- Seagrass fishes of coastal area of the Lembeh strait, Bitung, North Sulawesi and surroundings. **Wulan Koagouw**, Ida Ayu Amarilia Dewi Murni, Teguh Peristiwady, Onny Nurrahman Marwayana, Petrus Ch. Makatipu, Rikardo Huwae, Jianguo Du. International Seminar on Biodiversity and Coastal Ecosystem on North Sulawesi Proceedings (2015)
- Additional specimens and a new record of *Anthiine* fish from North Sulawesi, Indonesia. Teguh Peristiwady, **Wulan Koagouw**, Jianguo Du, Petrus Ch. Makatipu, Onny Nurrahman Marwayana, Rikardo Huwae. International Seminar on Biodiversity and Coastal Ecosystem on North Sulawesi Proceedings (2015)

MEDIA COVERAGE - NEWS ARTICLE

<https://www.bbc.com/indonesia/majalah-58990747>

<https://en.tempo.co/read/1514972/paracetamol-contamination-in-jakarta-bay-govt-urged-to-take-responsibility>

<https://en.tempo.co/read/1513636/jakarta-bay-paracetamol-contamination-researcher-reveals-possible-sources>

<https://en.tempo.co/read/1512683/seawater-in-angke-ancol-contaminated-with-paracetamol-study-finds>

<https://www.cnnindonesia.com/nasional/20211005175521-20-703742/laut-jakarta-tercemar-paracetamol-klhk-panggil-27-perusahaan>

<https://www.bbc.com/indonesia/majalah-58990747>

<https://en.tempo.co/read/1514972/paracetamol-contamination-in-jakarta-bay-govt-urged-to-take-responsibility>

<https://en.tempo.co/read/1513636/jakarta-bay-paracetamol-contamination-researcher-reveals-possible-sources>

<https://en.tempo.co/read/1512683/seawater-in-angke-ancol-contaminated-with-paracetamol-study-finds>

<https://www.cnnindonesia.com/nasional/20211005175521-20-703742/laut-jakarta-tercemar-paracetamol-klhk-panggil-27-perusahaan>

<https://www.cnnindonesia.com/teknologi/20211004124819-199-703058/ahli-ungkap-sumber-pencemaran-paracetamol-di-teluk-jakarta>

<https://www.cnnindonesia.com/nasional/20211005164315-20-703696/klhk-sebut-paracetamol-bukan-unsur-pencemar-laut-jakarta>

<https://www.cnnindonesia.com/teknologi/20211002183751-199-702571/kadar-paracetamol-jakarta-lebih-tinggi-dari-brazil-portugal>

<https://www.cnnindonesia.com/nasional/20211005132450-20-703561/walhi-soal-teluk-jakarta-tercemar-paracetamol-pemprov-lalai>

<https://www.cnnindonesia.com/teknologi/20211002134758-199-702507/6-efek-polusi-paracetamol-seperti-di-jakarta-buat-hewan-laut>

<https://www.cnnindonesia.com/nasional/20211004154653-20-703174/wagub-dki-pembuang-paracetamol-laut-jakarta-bukan-individu>

<https://www.cnnindonesia.com/nasional/20211002081650-20-702406/laut-jakarta-tercemar-paracetamol-konsentrasi-tinggi>

<https://www.cnnindonesia.com/teknologi/20211001152828-199-702154/bahaya-pencemaran-paracetamol-seperti-terjadi-di-laut-jakarta>

<https://www.cnnindonesia.com/nasional/20211004135055-20-703109/wagub-ancam-sanksi-pembuang-paracetamol-di-teluk-jakarta>

<https://www.cnnindonesia.com/nasional/20211003141740-20-702733/dlh-ambil-sampel-uji-limbah-paracetamol-selesai-2-pekan>

<https://www.cnnindonesia.com/nasional/20211003141740-20-702733/dlh-ambil-sampel-uji-limbah-paracetamol-selesai-2-pekan>

<https://www.cnnindonesia.com/nasional/20211003141740-20-702733/dlh-ambil-sampel-uji-limbah-paracetamol-selesai-2-pekan>

<https://www.cnnindonesia.com/teknologi/20211001115929-199-701993/teluk-angke-dan-ancol-di-jakarta-tercemar-paracetamol>

<https://www.cnnindonesia.com/nasional/20211002081650-20-702406/laut-jakarta-tercemar-paracetamol-konsentrasi-tinggi>

<https://www.cnnindonesia.com/nasional/20211002081650-20-702406/laut-jakarta-tercemar-paracetamol-konsentrasi-tinggi>

<https://www.cnnindonesia.com/teknologi/20211005103113-199-703497/fakta-keparahan-limbah-paracetamol-di-teluk-jakarta>

<https://www.cnnindonesia.com/teknologi/20211005103113-199-703497/fakta-keparahan-limbah-paracetamol-di-teluk-jakarta>

https://www.menlhk.go.id/site/single_post/4465/kontaminasi-paracetamol-di-teluk-jakarta-perlu-penelitian-lebih-lanjut

www.kompas.com/sains/read/2021/10/04/130100923/teluk-jakarta-tercemar-paracetamol-peneliti-duga-sumbernya-dari-sini

www.kompas.com/sains/read/2021/10/04/130100923/teluk-jakarta-tercemar-paracetamol-peneliti-duga-sumbernya-dari-sini

www.kompas.com/sains/read/2021/10/04/130100923/teluk-jakarta-tercemar-paracetamol-peneliti-duga-sumbernya-dari-sini

<https://www.kompas.com/sains/read/2021/10/03/200200823/teluk-jakarta-tercemar-parasetamol-konsentrasi-tinggi-dlh-uji-sampel>

<https://www.kompas.com/sains/read/2021/10/03/200200823/teluk-jakarta-tercemar-parasetamol-konsentrasi-tinggi-dlh-uji-sampel>

<https://megapolitan.kompas.com/read/2021/10/22/22432791/wagub-dki-sudah-tidak-ditemukan-kandungan-parasetamol-di-teluk-jakarta>

<https://megapolitan.kompas.com/read/2021/10/22/22432791/wagub-dki-sudah-tidak-ditemukan-kandungan-parasetamol-di-teluk-jakarta>

<https://megapolitan.kompas.com/read/2021/10/26/18570821/pencemaran-parasetamol-di-teluk-jakarta-dinkes-dki-sebut-belum-tentu-dari>

<https://megapolitan.kompas.com/read/2021/10/26/18570821/pencemaran-parasetamol-di-teluk-jakarta-dinkes-dki-sebut-belum-tentu-dari>

<https://megapolitan.kompas.com/read/2021/10/05/20463821/soal-teluk-jakarta-tercemar-parasetamol-dinas-lh-dki-masih-harus>

<https://megapolitan.kompas.com/read/2021/10/05/20463821/soal-teluk-jakarta-tercemar-parasetamol-dinas-lh-dki-masih-harus>

<https://megapolitan.kompas.com/read/2021/10/05/08592471/kandungan-parasetamol-cemari-teluk-jakarta-akibat-gaya-hidup-atau>

<https://megapolitan.kompas.com/read/2021/10/05/08592471/kandungan-parasetamol-cemari-teluk-jakarta-akibat-gaya-hidup-atau>

<https://megapolitan.kompas.com/read/2021/10/04/18035561/komisi-d-dprd-dki-akan-minta-penjelasan-dinas-lh-terkait-pencemaran>

<https://www.kompas.com/sains/read/2021/10/04/170200323/teluk-jakarta-tercemar-paracetamol-bagaimana-cara-memperbaikinya>

<https://megapolitan.kompas.com/read/2021/10/04/14104211/penjelasan-peneliti-tentang-asal-pencemaran-parasetamol-di-teluk-jakarta>

<https://megapolitan.kompas.com/read/2021/10/01/14025561/limbah-di-teluk-jakarta-mengandung-parasetamol-pemprov-dki-telusuri>

<https://www.liputan6.com/news/read/4676263/headline-perairan-teluk-jakarta-tercemar-parasetamol-seberapa-bahaya>

<https://megapolitan.kompas.com/read/2021/10/04/14081241/teluk-jakarta-tercemar-parasetamol-wagub-dki-ancam-beri-sanksi-jika>

<https://www.kompas.com/sains/read/2021/10/04/160000223/teluk-jakarta-tercemar-paracetamol-apa-efeknya-untuk-manusia>

<https://www.kompas.com/sains/read/2021/10/04/173200323/teluk-jakarta-tercemar-paracetamol-walhi-kami-terkejut-tanda-pemprov-lalai?page=all>

<https://www.cnbcindonesia.com/tech/20211004130035-37-281217/dugaan-asal-muasal-teluk-jakarta-yang-tercemar-paracetamol>

<https://www.cnbcindonesia.com/tech/20211004122122-37-281208/penelitian-brin-ungkap-teluk-jakarta-tercemar-paracetamol>

<https://www.cnbcindonesia.com/news/20211002223653-4-280952/pak-anies-laut-jakarta-tercemar-paracetamol-sebahaya-apa>

<https://metro.sindonews.com/read/564062/171/limbah-paracetamol-diduga-cemari-di-teluk-jakarta-wagub-dki-tunggu-hasil-penelitian-1633792202>

<https://metro.sindonews.com/read/560076/171/dinas-lh-dki-temuan-paracetamol-di-teluk-jakarta-data-2-3-tahun-lalu-1633432206>

<https://lifestyle.sindonews.com/read/559888/155/kadar-paracetamol-teluk-jakarta-tinggi-ini-dampak-buang-obat-sembarangan-terhadap-lingkungan-1633421418>

<https://metro.sindonews.com/read/559378/171/paracetamol-teluk-jakarta-tinggi-akibat-buruknya-pengelolaan-limbah-farmasi-1633385414>

<https://metro.sindonews.com/read/557564/170/teluk-jakarta-diduga-tercemar-paracetamol-dlh-periksa-sampel-air-laut-1633183836>

<https://metro.sindonews.com/read/557162/170/kandungan-paracetamol-di-teluk-jakarta-dlh-dki-akan-mendalami-pencemaran-air-laut-1633147839>

<https://kabar24.bisnis.com/read/20211004/15/1450255/peneliti-ungkap-dugaan-asal-parasetamol-yang-cemari-teluk-jakarta>

https://jakarta.bisnis.com/read/20211003/77/1449711/benarkah-teluk-jakarta-terkontaminasi-parasetamol-ini-5-faktanya?utm_source=Desktop&utm_medium=Artikel&utm_campaign=BacaJuga_1

https://jakarta.bisnis.com/read/20211001/77/1449363/kandungan-paracetamol-ditemukan-di-teluk-jakarta-apa-kata-pemprov-dki?utm_source=Desktop&utm_medium=Artikel&utm_campaign=BacaJuga_1

<https://health.detik.com/berita-detikhealth/d-5751873/lautnya-tercemar-paracetamol-peneliti-orang-jakarta-banyak-pusingnya>

<https://health.detik.com/berita-detikhealth/d-5748359/temuan-lengkap-peneliti-soal-cemaran-paracetamol-di-air-laut-dki>

<https://health.detik.com/berita-detikhealth/d-5747986/waduh-ada-air-laut-terkontaminasi-paracetamol-termasuk-ancol>

<https://news.detik.com/berita/d-5752975/fakta-terbaru-paracetamol-di-laut-jakarta>

<https://news.detik.com/berita/d-5752224/wagub-dki-soal-paracetamol-cemari-laut-jakarta-harus-dibersihkan>

<https://news.detik.com/berita/d-5750437/menunggu-hasil-lab-dlh-soal-kandungan-paracetamol-di-teluk-jakarta>

<https://news.detik.com/berita/d-5749498/6-hal-tentang-paracetamol-cemari-air-di-teluk-angke-hingga-ancol>

<https://news.detik.com/berita/d-5749659/air-laut-di-muara-angke-mengandung-paracetamol-warga-tak-cium-bau-obat>

<https://news.detik.com/berita/d-5749612/heboh-temuan-paracetamol-cemari-teluk-jakarta>

<https://news.detik.com/berita/d-5749390/wagub-dki-soal-paracetamol-di-laut-jakarta-limbah-farmasi-naik-akibat-covid>

<https://news.detik.com/berita/d-5749485/komisi-d-dprd-dki-ke-dlh-cari-tahu-asal-paracetamol-di-laut-jakarta>

<https://megapolitan.kompas.com/read/2021/10/05/08592471/kandungan-parasetamol-cemari-teluk-jakarta-akibat-gaya-hidup-atau?page=all>

<https://megapolitan.kompas.com/read/2021/10/01/14025561/limbah-di-teluk-jakarta-mengandung-parasetamol-pemprov-dki-telusuri>

<https://megapolitan.kompas.com/read/2021/10/01/18303511/dua-kemungkinan-asal-kandungan-parasetamol-di-teluk-jakarta>

<https://health.detik.com/berita-detikhealth/d-5751794/dari-mana-asal-paracetamol-yang-cemari-teluk-jakarta-ini-jawab-peneliti>

LIVE TV COVERAGE

CNN Indonesia (2021)

<https://youtu.be/MqXG-clPRWk>

Kompas TV (2021)

<https://youtu.be/MjtWxjR07U4>

TVOne (2021)

NEWS COVERAGE

<https://www.youtube.com/watch?v=LrigSS-ICFI>
<https://www.youtube.com/watch?v=iDzLlzRnA9A>
<https://www.youtube.com/watch?v=JoghdOYz1zU>
<https://www.youtube.com/watch?v=MjtWxjR07U4>
<https://www.youtube.com/watch?v=TJaAVVB3kNo>
<https://www.youtube.com/watch?v=pexNOjBJ4oU>
<https://www.youtube.com/watch?v=lsXwnZyYNoY>
<https://www.youtube.com/watch?v=mnortiAtNpg>
<https://www.youtube.com/watch?v=kRJKHiox60g>
<https://www.youtube.com/watch?v=P8khYj-2f6k>
<https://www.youtube.com/watch?v=MqXG-clPRWk>
https://www.youtube.com/watch?v=v_wncCPjpuk
<https://www.youtube.com/watch?v=j0c8Op0TGKI>
<https://www.youtube.com/watch?v=gCIGTxNWYlw>
<https://www.youtube.com/watch?v=n0BKJO1eMnc>
<https://www.youtube.com/watch?v=lsXwnZyYNoY>
<https://www.youtube.com/watch?v=PID716HnekE>
https://www.youtube.com/watch?v=FQ7I9ZRna_I
<https://www.youtube.com/watch?v=0SQHHhnzBOc>
<https://www.youtube.com/watch?v=KN48C9rPrOc>
<https://www.youtube.com/watch?v=rFDVPdbXZRY>
<https://www.youtube.com/watch?v=X3329kuiCAQ>
<https://www.youtube.com/watch?v=-YsF3VOXNrA>
<https://www.youtube.com/watch?v=fWpJMJKqCEU>
https://www.youtube.com/watch?v=aXw_mEbzqMg
<https://www.youtube.com/watch?v=NwAu9R02LcU>
https://www.youtube.com/watch?v=FdwMiLY5_6A
<https://www.youtube.com/watch?v=66ubao79vVM>
<https://www.youtube.com/watch?v=JloXAsCoSXE>
<https://www.youtube.com/watch?v=QzL91SDqAg>
<https://www.youtube.com/watch?v=fhqsNYrTMtM>
<https://www.youtube.com/watch?v=YPNg3GUR1CQ>
<https://www.youtube.com/watch?v=RYkkKXfHJdc>
<https://www.youtube.com/watch?v=irW539bVX60>
<https://www.youtube.com/watch?v=rTLn6YBmU1E>
https://www.youtube.com/watch?v=8Mk4Bnre_ik
https://www.youtube.com/watch?v=uOxOdRae_gk
<https://www.youtube.com/watch?v=F5xy4NLtTaE>
<https://www.youtube.com/watch?v=GCrxw7GkOs8>
<https://www.youtube.com/watch?v=ZpJIGNpwX5g>
https://www.youtube.com/watch?v=_72A_U5OQ1A
<https://www.youtube.com/watch?v=zKnxgiXspMY>
<https://www.youtube.com/watch?v=whhLD1INHnl>
<https://www.youtube.com/watch?v=XFXDkrZmGNQ>
<https://www.youtube.com/watch?v=eiYMzlydaAg>
<https://www.youtube.com/watch?v=rHIYzc-wmko>
<https://www.youtube.com/watch?v=-GzVnZE-d6Q>
<https://www.youtube.com/watch?v=UPBC3TkFCy8>
<https://www.youtube.com/watch?v=05w2fat1HB0>
<https://www.youtube.com/watch?v=OjkeMaJQyoc>
<https://www.youtube.com/watch?v=qC2gXrWwzks>
<https://www.youtube.com/watch?v=9AlqHryvEgl>
https://www.youtube.com/watch?v=_kz2pra6m5Y
<https://www.youtube.com/watch?v=TwYQZjsKGVY>
<https://www.youtube.com/watch?v=9oh2Es5qDt0>