

Waste Tires, Pyrolysis and Syngas: A few useful references and articles

Compiled by Lynn Anderson and Douglas Fowler, August, 2022

Please note: These sources can be accessed online and are free to anyone. It is by no means an exhaustive or scholarly search – simply a few articles found online during a couple of hours of searching. No attempt has been made to put the citations in one or another standard format – we wanted there to be enough information here for anyone to find these articles.

IMPORTANT: Some of the general articles may speak favorably of the plastic pyrolysis processes proposed. Others are critical. I think it helps to know what the hopes are for such processes. And the “pro” articles at least give a reader some idea of what is being discussed. A semi-technical article is also included under “TECHNICAL ARTICLES below. This article (Tullo, 2022), from the American Chemical Society, is non-critical of the pyrolysis proposals – even to the point of favorable comments. It is important to know that the AMERICAN CHEMISTRY COUNCIL is the lobbying group for the petrochemical industry:

<https://www.opensecrets.org/federal-lobbying/clients/summary?cycle=2022&id=D000000365>

GENERAL ARTICLES, FACT SHEETS and COMMENTARY

“Scrap Tires As Fuel And A New Idea To Make It Better”

Tires-Easy April 26, 2013 Tire technology, [Scrap Tires As Fuel And A New Idea To Make It Better](#)

“Gasification, Pyrolysis, Plasma Arc: False Solution to Plastic Pollution”

[Gasification, Pyrolysis, Plasma Arc: False Solutions to Plastic Pollution - GAIA](#)

“Dioxins, Furans and Dioxin-Like Polychlorinated Biphenyls Factsheet”

U.S. Department of Health & Human Services

https://www.cdc.gov/biomonitoring/DioxinLikeChemicals_FactSheet.htm

“Dioxins and Furans” U.S. EPA Archive Document

“Dioxins and Furans”

<https://www.canada.ca/en/health-canada/services/healthy-living/your-health/environment/dioxins-furans.html>

“Turning tires into gas for energy and new, valuable materials” (2013)

<https://www.sciencedaily.com/releases/2013/04/130404081548.htm>

TECHNICAL ARTICLES

The Process

Policella, M., Wang, Z., Burra, K. G. and Gupta, A. K. (2019) “Characteristics of Syngas from Pyrolysis and CO₂-Assisted Gasification of Waste Tires”

Version of Record: [Characteristics of syngas from pyrolysis and CO₂-assisted gasification of waste tires - ScienceDirect](#)
[Manuscript_d0bbb20669872ca4cff530c88939b618](#)

Published by Elsevier. This manuscript is made available under the Elsevier user license <https://www.elsevier.com/open-access/userlicense/1.0/>

Saebea, D., Ruengrit, P., Arpornwichanop, A., and Patcharavorachot, Y. (2019) “Gasification of plastic waste for synthesis gas production” 6th International Conference on Energy and Environment Research, ICEER 2019, 22–25 July, University of Aveiro, Portugal. Energy Reports 6 (2020) 202–207, sciencedirect.com

Published by Elsevier Ltd. This is an open access article under the CCBY-NC-ND license [Deed - Attribution-NonCommercial-NoDerivatives 4.0 International - Creative Commons](#)

Tullo, Alexander H. (2022) “Amid controversy, industry goes all in on plastics pyrolysis” *Chemical & Engineering News*, Vol. 100, No. 36, online at [Amid controversy, industry goes all in on plastics pyrolysis](#)

Pollution – dioxins and furans

Lopes, E. J., Okamura, L. A., and Yamamoto, C. I. (2015) “Formation of Dioxins and Furans during Municipal Solid Waste Gasification” *Brazilian Journal of Chemical Engineering*, Vol. 32, No. 01, pp. 87 - 97, January - March, 2015

[formation of dioxins and furans during municipal solid waste gasification](#)

Shibamoto, T., Yasuhara, A. and Katami, T. (2007) “Dioxin Formation from Waste Incineration” *Review of Environmental Contamination and Toxicology*, 190:1-41

Abstract online at <https://pubmed.ncbi.nlm.nih.gov/17432330/>

Applications, Process Byproducts – an example with silicon carbide (SiC)

Magnani, G., Galvagno, S., Sico, G., Portofino, S., Freda, C. and Burres, E. (2016) “Sintering and mechanical properties of β -SiC powder obtained from waste tires”

Journal of Advanced Ceramics, 2016, 5(1): 40–46, DOI:

<https://www.sciopen.com/article/10.1007/s40145-015-0170-0?issn=2226-4108>

Galvagno, S., Portofino, S., Casciaro, G., Casu, S., d’Aquino, L., Martino, M., Russo, A., and Bezzi, G. (2007) “Synthesis of beta silicon carbide powders from biomass gasification residue” *Journal of Materials Science* (2007) 42:6878–6886, DOI

[Synthesis of beta silicon carbide powders from biomass gasification residue | Journal of Materials Science](#)

Legal Questions

“Clearing the Air: US EPA Looks to Revamp Pyrolysis and Gasification Regulations”
National Law Review, Vol. XI, No. 292, October 19, 2021

[Clearing the Air: US EPA Looks to Revamp Pyrolysis and Gasification Regulations](#)