

Full Name: Deborah A. Kopsick

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Title of Defense: Predictive Factors to Explain the Export of Hazardous Waste by Parties to the Basel Convention

Committee:

Roger R. Stough, Chair

Peter J. Balint, Member

Allison Macfarlane, Member

Michael W. Slimak, Member

## **ABSTRACT**

### **PREDICTIVE FACTORS TO EXPLAIN THE EXPORT OF HAZARDOUS WASTE BY PARTIES TO THE BASEL CONVENTION**

The number of legal and illegal transboundary shipments of hazardous waste has been increasing in the past decade. The mismanagement of some of these shipments has resulted in illness and death, along with widespread environmental contamination. Despite efforts of the Basel Convention, a treaty which limits the transboundary shipment of waste, to reduce these shipments through mandating the treatment and disposal of any wastes as close as possible to the point of generation, recent national export data indicates over 80% of all reporting parties to the Basel Convention export part or all of their hazardous waste. This study examines select social (level of human development), economic (trade extent, structure and openness), political (level of democracy and tolerance to civil society) and technological (technology development support) factors that may drive a country to export its waste rather

than handle it within their national borders. This issue is examined at the national level since it is the responsibility of the national government to grant permission for these shipments to occur. Self-reported national data is often incomplete, so missing values analysis was conducted and multiple imputation was performed on the research dataset. Multivariate linear regression was then conducted on each of the five imputed datasets and the results pooled. The results of this analysis indicate that technology development support, as determined by a proxy variable consisting of a country's gross expenditure on research and development in relation to their gross domestic product, is a significant predictor of hazardous waste export, and that as technology development increases, hazardous waste exports decrease. The development of in-country waste minimization and waste treatment/disposal technologies may be one explanation for this result. Additional exploratory analyses indicate the broadness of the trade structure, related to trade diversity, and the level of democracy are predictors of a country's propensity to export waste, when the technology development support variable is removed from the regression analysis. National level policy options to address these results may include the encouragement of increased support of research and development, especially in the area of environmentally sound waste management technologies. Collective action, at both the national level and the field level, is needed to address the illegal and unnecessary transboundary shipment of hazardous wastes and protect a global commons, the environment.