



Online Ethics Center  
FOR ENGINEERING AND SCIENCE

## Individual Character Information

### Author(s)

Anonymous

### Description

Character information for the role-play case study "Nanosilver Linings."

### Body

*(To be distributed individually to each team member)* [PDF of Student Case Material](#)

## You are...Hansen, NanoPackaging Solutions Executive

Public Information: Hansen is a shrewd and savvy businessperson known for toeing ethical lines when profit is involved. Before moving to NanoPackaging, Hansen worked with for a hydrofracking firm and helped them move into a city where many citizens voiced opposition and concerns about the environmental impact. Hansen sees the benefits of free market capitalism more than its downsides, holding that: citizens and businesses should concern themselves with the present time and economic viability; long-term problems can't be foreseen and other problems (with workers, wildlife, etc.) should be dealt with as they arise; it is unwise and unfair for some to 'borrow trouble' at the expense of real, tangible benefits for others. Hansen was born and raised in East Falls, but hasn't lived in the Midwest as an adult until a few months ago. NanoPackaging's need for an executive presence in East Falls

coincided with a worsening family health situation requiring in-person attention.

Private information: Hansen's father died recently, and in bereavement Hansen's emotions are more volatile. The cause of death was mesothelioma, a condition he contracted from a career as a construction worker. While Hansen truly believes environmental issues can be addressed along the way and tend to be overblown by 'tree-huggers', Hansen has a personal soft spot with respect to occupational health hazards and the health of the people. Hansen has also been told by an executive within NanoPackaging that the outcome in East Falls will determine Hansen's own employment status with the company. Hansen anticipates that Green will be vehement in protesting the interests of NanoPackaging, taking the moral high ground with respect to uncertain risks to human and environmental health. Hansen is prepared to counter with an ethical justification for nanotechnology-enabled food packaging—the need to reduce food waste in addressing food need for a burgeoning global population.

## **You are...Thompson, Mayor of East Falls**

Public Information: Thompson is approaching the end of the second term as mayor and is hoping for re-election, but the current unemployment rates have dropped approval ratings considerably. Although not personally at fault for the closing of the steel mill, as time passes without new employment opportunities in the city, the citizens are taking some frustration out on the mayor. The location of NanoPackaging to East Falls would greatly increase approval ratings amongst the blue-collar middle class, who vote in droves through the organized efforts of the Unions. However, Mayor Thompson risks losing the approval of many advisors, the intellectual and financial elite of the community, many of whom represent power and influence that could define the future of Mayor Thompson's political career.

Private Information: Under the table, Thompson is being offered bribes from opposing forces; each trying to sway the Mayor to their cause. The pro-NanoPackaging contingency is offering more lucrative incentives. However, Mayor Thompson has relied heavily on the Scientific Advisory Panel when it comes to major decisions where scientific evidence is involved, and it would disrupt their working relationship to blatantly go against their advice. The mayor's scientific advisors are themselves divided as to a recommended course of action. Some are concerned

that emerging nanotechnologies, both materials and processes, pose a real toxicological risk that could undo the incipient NanoPackaging company altogether. Others are more wary of the potential for public backlash, whether scientifically justified or not. They use Bisphenol A as an example that people are getting skittish about what is leaching out of their food and beverage containers. In private reflection about the future of East Falls, Thompson thinks that the best long-term strategy would be to focus on geographically fixed assets—the lake and the university—rather than a major industrial employer whose continued presence cannot be taken as a given.

## **You are...Professor Brown, Researcher and Instructor at a local university**

Public Information: Within academic circles, Brown is a well-respected researcher with a doctorate from an Ivy League institution. In the community, Brown is known for outreach work, such as judging the science fair, and now for bringing the Great Lakes Shore Nature Preserve and STEM Education Center to town. Brown is articulate and grants interviews with the press. Nanotechnology has sparked the interest of journalists, so Brown has been trying to keep up in general, and not just in one limited area of expertise, with respect to the forefront of nanoparticle research. Professor Brown is convinced of the potential for positive applications incorporating nanomaterials but has also read research papers that give cause for thoughtful concern, and at least a modicum of restraint in action. Professor Brown feels pressure to give simple answers where the reality behind the questions is actually quite complex and partially unknown.

Private Information: At the university, Brown is under pressure. In the department, citizenship, outreach, and community education initiatives are not highly valued. With federal funding opportunities in decline, the scientists and engineers are being encouraged to collaborate with the business sector in ways that get corporate money flowing into the university. Any public remarks interpreted as anti-NanoPackaging may adversely affect Professor Brown's career at the university. The university's Board of Trustees includes the CEO of the food conglomerate contracted with NanoPackaging, who wants to see them locate to East Falls over the competing candidates.

# **You are...Green, Representative for the Eco Footprint Foundation, an environmental NGO**

Public Information: An established environmentalist, Green worked as an ecologist studying the effects of industrial waste on aquatic environments in Lake Michigan. Green openly opposes NanoPackaging moving into town because of the unknown environmental risks of silver nanoparticles on the environment. Green refers frequently to the Precautionary Principle, saying that we should be nearly certain of safety before we introduce this new technology into society and the environment. The food dimension of this enterprise disturbs Green as well. Green is active in organic community gardening and the local foods movement—chemically enabling increased shelf life for processed food is counter to this movement, which is seen to promote public health (with respect to epidemic levels of obesity and nutritionally deficient ‘food deserts’) as well as ecological health.

Private information: Green is negotiating a role for Eco Footprint at the Great Lakes Shore Nature Preserve and STEM Education Center; Brown acknowledges potential for Eco Footprint to enhance the center but is expressing concern about real or perceived politicization of the center. Green wonders whether public speech related to the NanoPackaging issue will sway these negotiations. Although Green chooses to live humbly in accordance with personal values, Green’s parents are financially well-off. As members of boards and Chambers of Commerce, they have expressed a strong preference that Green quiet opposition to corporate interests in public. Nonetheless, Green is determined to boldly and insistently defend the environment on behalf of the NGO, and in accordance with personal values. For a sustainable future on planet Earth, financial self-interest cannot be unopposed in shaping decisions about science and technology.

## **You are...Jones, Skilled worker**

Public Information: Nearly everyone in town has heard the ‘American Dream’ story of Jones, since it was featured by CNN interviews as a human interest dimension of

the news coverage when the steel mill announced its closure of the East Falls plant. The story starts with grandparents who changed their name to Jones upon immigrating to the United States, because they wanted to give their children and grandchildren every possible opportunity to fit in as Americans. The newly-American family ran a small ethnic grocery below the flat where they lived, guaranteeing food and shelter, though money for other things was sometimes very tight. The parents of Jones met in the public Chicago high school they attended, married at age 19, and worked tirelessly to modernize the family grocery, eventually opening a second location in East Falls with some tables for restaurant service. The steel mill employees were regular customers there, and when Jones was sixteen years old and rebelliously seeking a summer job separate from the family business, a patron saw to it that a production worker position was offered. After high school graduation, Jones continued as a production worker full time and was promoted to a production supervisor position after ten years on the job. Functioning so well as a line manager, Jones was promoted again after eight more years, to an operations manager position overseeing multiple production lines. Now Jones is still unemployed and eager to resume professional life.

Private information: Jones was just beginning to feel confident about saving enough money for college tuitions and weddings for children, and for retirement, when the news of the East Falls steel mill closure arrived. With deep family roots and a strong social network in the community, Jones does not want to relocate the family but needs to draw a salary again soon, so news of the prospect of Nano Packaging Solutions locating in East Falls seems a potential godsend. Jones is considered a shoe-in for a high level production supervisor position if NanoPackaging Solutions follows through with the local hiring process it has referred to in public statements, but the lack of detailed commitment on this point is a bit nerve wracking to Jones and the other highly skilled workers left jobless by the steel mill's departure, especially those without college degrees. If things work out and Jones does become a production supervisor for Nano Packaging Solutions, the next challenge will be to figure out how to ensure occupational safety and health protections for direct reports in the very new field of nanomanufacturing. The fact that tiny particles of metal are involved makes Jones a bit nervous, because of a workplace accident that took place in the early years of production work—maintenance on a ventilation system had been neglected by superiors, and when the system failed invisible airborne particulates landed Jones in an ambulance in severe respiratory distress. This experience has stayed in the mind of Jones over the years. With managerial

authority, Jones took great pride in adhering to standards and regulations to facilitate a fair and safe working environment with no major accidents or emergency illnesses, which led to low turnover and high employee satisfaction on lines supervised by Jones. The practices of the steel industry had been refined through the decades, compliance improved, and the dangers faced by workers were mostly visible and understood. The international standards and federal regulations about nanotechnology seem nonexistent, or rudimentary and inadequate, in comparison. After being blindsided by the closure of the steel mill, and by respiratory distress brought on by breathing invisible particles, Jones is keenly aware that the most worrying threat is an unrecognized one. Jones realizes that none of these fears can show in advocating strongly for NanoPackaging in East Falls. Jones hopes that nobody publicly recalls the details of the workman's compensation case of long ago in order to weaken the argument that NanoPackaging would be a boon for the workers of East Falls. Invisible particles or not, high tech seems to be the future of manufacturing all over America, and Jones wants to go back to work in East Falls...NanoPackaging is the only hope on the horizon, and it has to be fought for.

*Acknowledgement: Christopher Bosso, Ph.D. for insightful contributions to the development of character Jones.*

## **You are...Reed, Investigative journalist**

Public Information: Reed is a well-known investigative journalist who has been involved in unravelling numerous scandals, including unethical business practices, in the greater Chicago area. Reed is not formally educated in science, engineering, or business. However, Reed does all of the homework necessary to pursue journalism at an elite level. For this story, Reed has conversed with enough experts and read/understood enough about nanoscience to have a much better grasp of the material than the average citizen. Reed intends to ask pointed, detailed questions about the size of nanosilver particles being used, the migration rates of silver ions or nanoparticles into foods from NanoPackaging containers, and the environmental fate and persistence of silver from packaging after end-of-life disposal.

Private Information: Reed chose a career in investigative journalism before the internet era, and wonders about job security despite producing excellent work. For

this assignment, Reed's editor has tasked Reed with uncovering as much dirt on NanoPackaging Solutions as possible in order to create a more enticing story for readers (and thus advertisers). Because of this, Reed is forced to be less-than-balanced in questioning of Hansen, Brown, and Thompson even though personally sympathetic with the cause of an economically beleaguered town attempting to gain job opportunities. Reed's father has provided an earful on the subject of NanoPackaging and East Falls. Before retiring, Reed's father spent an entire career on the factory floors of East Falls, alongside his brother. Reed's uncle recently passed away due to mesothelioma, something their family blames the scientific and industrial communities for because they rushed forward with a technology before understanding the occupational health risks of it. Reed's dad is grieving, concerned about his own occupational exposures, and laments the harmful consequences of the rapid technological change he's seen throughout his life. The interaction between Reed and Hansen is complicated by the fact that Reed's father and uncle worked briefly with Hansen's father and knows that he died of mesothelioma as well.

## **You are...Carlson, Concerned parent**

Public Information: Carlson is known as an active parent in the community's public schools, sometimes working as a substitute elementary school teacher, as well as in community affairs. Carlson has recently recovered from melanoma, and this health scare has led Carlson to conduct internet research into the efficacy of different sunscreens. There are numerous articles about the presence of metal nanoparticles in sunscreens, which led Carlson to discover information, misinformation, and hype about nanotechnology in general.

Private Knowledge: Carlson's spouse was laid off when the steel mill closed and has yet to find any work. Ultimately Carlson secretly wants the end result to be for the NanoPackaging company to move into town. Carlson wants their family and other families in their community to have the opportunity to provide for their families through adequate work without needing to relocate. That said, Carlson's own work and the education of the family's children depends upon the public school system—Carlson does not want jobs to come to the city at the expense of the schools. Also, health is now a deeply personal concern, with any mention of carcinogens or cancer triggering fear.

**Next:** [Readings and References](#)

## **Rights**

Use of Materials on the OEC

## **Resource Type**

Case Study / Scenario

## **Topics**

Public Health and Safety

Lab and Workplace Safety

Social Responsibility

Safety

Emerging Technologies

## **Discipline(s)**

Nanoscience and Nanotechnology

Life and Environmental Sciences

Computer, Math, and Physical Sciences

Engineering

Teaching Ethics in STEM