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From Baikal to the North Pacific: *Living in a World of Plastics*

By Elena Agarkova

IRKUTSK, LAKE BAIKAL—One man's trash may be another's treasure, they say. As I tried to find recycling businesses in Irkutsk, I realized that it certainly takes time and concerted effort to make this saying come true.

One of the stories about my childhood that I liked to tell my friends involved having to collect cartons and paper to buy books. In the Soviet Union days, after you collected 20 kilograms of paper, you could bring it to one of the many *makulatura* collection points, where, after putting your bundle (usually tied up with rope) on a big industrial scale, you received a special stamp. After you collected at least ten of such stamps, you would attempt the next step of the transaction, hunting down a book you wanted. Not any specific book necessarily, just whatever you considered to be a good book. The *defitsit*, in the Soviet planned economy, extended to everything, including books. You needed a certain amount of "book" stamps to buy your Tolstoy, Dostoevsky, or Maurice Druon,¹ in addition to paying the book's regular price.

Defitsit (the Russian word for deficit, which inhabitants of the Soviet Union used to refer to things one could not find in official stores) caused many curious phenomena, from long lines for makeup or green bananas to enormous respect commanded by members of the butcher profession. Another result of *defitsit* was that many people valued their job not for its salary, but for opportunities it provided to either steal something (i.e., "bring it home"), or buy *defitsytnyie* goods and re-sell them under the table at an inflated price. So it was for books. It was not enough that you could not walk into a Soviet Barnes & Noble (because nothing similar in

scope existed) and ask the salesclerk to find the latest edition of *Brothers Karamazov* (because in the best case scenario the salesclerk would simply ignore you, as an insane person). No, you had to collect your 20-plus kilograms of *makulatura*, make sure you had enough stamps, and then go out and scour the bookstores in your city, hoping that one of these times they would have something interesting. Or you could try to befriend the salesclerk — with money or bartering — and have her let you know when a good book came in. If you had a strong enough relationship, she would even hold it for you. (One caveat — I grew up in Moscow, a city notorious for having things not available in the rest of the country, so I have no idea what "provincial" bookstores offered their customers.) Only after executing all of these steps could you walk out of the store with the coveted volume in your hand.

Strangely, I do not remember all of these things as difficult, unnecessary, or complicated. Since I did not know another way existed, I just accepted this one as a fact of life. Everyone collected *makulatura*. Young pioneer teams organized *makulatura* drives, competing for having collected the biggest amounts. But an even more amazing thing I accepted as normal was the near-absence of plastic in the Soviet Union (for personal consumption, that is). I don't remember seeing any plastic wrapping or containers during my childhood. Liquids came in glass or in "tetra paks." This made glass a coveted commodity. When you went to the store, you took some empty glass jars with you, just in case the sour cream truck was there. And you always had your *avos'ka*, or the amazing expandable net bag (that you now buy at Whole Foods or any

¹ His series of seven historical novels, published in the 1950s under the title *Les Rois Maudits* (The Accursed Kings), became incredibly popular among Russians (as opposed to his scholarly writing, which earned him a seat at L'Académie française).

natural foods store for \$2.99), with you in case you had a chance to buy something and needed to carry it home because there were no plastic bags. Stores did not give them out for free. They did not wrap plastic around apples, set out on plastic trays. Tupperware did not exist in the Soviet Union. Lemonade stands did not have styrofoam cups. If you wanted sour cream, you took an empty glass container with you to the store, hoping that the sour cream truck would be standing nearby. If it was, you joined the line. When your turn arrived, the saleswoman lowered her ladle into a big aluminum bucket, and spooned some sour cream into your jar.

A glass jar in the Soviet Union lived many lives. Its stint on the store shelf was only the beginning. After being purchased it would be washed and dried in someone's kitchen, to be filled with preserves, dinner leftovers, tomorrow's lunch, many times over. When getting ready for a train trip, you might have put some cutlets into a jar to take with you. If, during your student days, you moved to a different town for college, your parents or grandma would send you homemade jams and pickles (those usually arrived in big 3- or 5-liter jars). When you were done with the raspberry jam, you had to find a friendly train conductor with whom you could send those jars back home. They were *defitsit*.

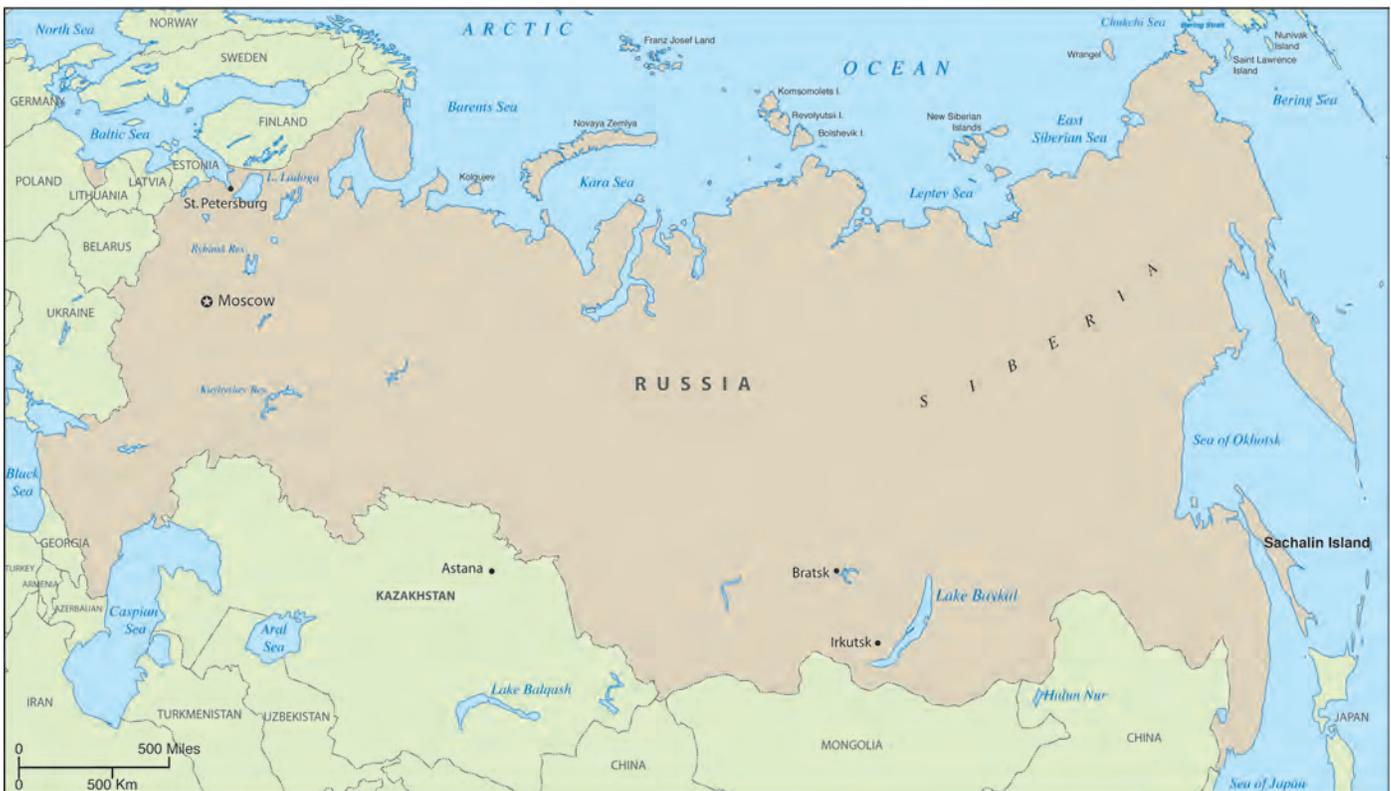
One of the pluses of the planned economy was that it allowed government to fully control the type of containers produced by the industry. The government could decree that one type of glass container shall be used for a certain purpose and *voilà*, that would be the only type of container Soviet factories would produce. Because beer and milk came in uniform glass containers, after you consumed the

substance inside, the container could quickly re-enter the production system.

This system does not exist anymore. The Soviet Union fell into separate pieces, and along with it the old way of life. Some old ladies still bring used egg cartons to the market, instead of paying 5 rubles for a new one, but by and large people have embraced the take-a-plastic-bag-it's-free mentality. (If I had a dollar for every time I refused, and had to explain to the confused saleswoman that I really do not want a free plastic bag... The usual dialogue goes like this: "But where will you put the apples?" "In my purse. See, I have this big purse. No, I'm serious, I don't need the bag. We already have enough at home, and don't you think we shouldn't be adding to unnecessary litter?" Sometimes they understand. Other time, if I'm not quick enough, I have to hand the plastic bag back).

Ever since I moved to Irkutsk, I felt guilty over throwing away things that I could have recycled back in the States. I noticed that over the past few years, for people of my generation recycling has become a moral imperative. If at my parents' home I sometimes fish empty shampoo bottles out of the regular garbage and take them to the recycling bin outside, many of my friends continue to separate their glass and plastic even when their city stops recycling. Not all of them can be described as ardent environmentalists or particularly eco-conscious. But the recycling message has been drilled into us and now it just feels wrong to throw out potentially reusable materials.

So my initial inspiration for this newsletter came from a personal quest to find businesses that recycle, in Irkutsk. Needless to say, the city itself does not have a recycling



program. Some remnants of the old Soviet system still exist. Homeless, alcoholics and pensioners collect beer bottles, which you can return for a nominal amount of money. In the summer, when many Russians enjoy a beer on a park bench, an old lady often stands nearby, waiting for them to hand over the bottle — and, if they are drinking too slowly for her liking, might even ask them to finish it already. Recently some Moscow supermarkets installed machines that take aluminum cans and certain types of glass bottles. Irkutsk has no collection points of this kind, and none planned for the near future.

But some recycling businesses do exist. I'd heard about a company that you could call to come pick up newspapers and carton boxes. Word on the street was that they would even give you some recycled toilet paper in exchange. That sounded great, but we did not generate much paper waste. Then I came across an informational brochure published by the Irkutsk administration and an environmental education center called "Baikal Waste Management" (run by the Irkutsk State Technical University), which listed some local waste processing businesses. The "plastics" section had nine companies. By the time I finished calling all of them, I found out that one company did not exist anymore, another two would take only pre-sorted consumer plastics and only in big volumes (half a ton and more), and one company took only clear plastic bags and wrap. The rest got their plastics from factories and other big manufacturers. As I did not yet understand all of the Russian abbreviations for different types of plastics, the guys on the other end of the line explained it to me through concrete examples: "We take the stuff they use for making big sugar sacks, you know?" Industrial plastics presented fewer problems for the secondary processors, being cleaner and easier to collect in large volume than post-consumer leftovers.

So I got very excited when one of those guys said, "Yes, we take all kinds of plastic." Did he mean we could sort our kitchen trash and bring it over? "Sure, we'll take plastic bottles too. We are storing them for now, until we get enough for processing." I almost could not believe it. I also thought that even if there were no city-wide waste collection programs, my friends at two local environmental NGOs, the Great Baikal Trail and Baikal Wave, would be interested in collecting their plastic. It would be better than nothing, or than our household alone.

The next day I went to see Oleg, the man on the phone

who ran "Promupak." (I figured I better not waste any time, lest they went out of business too.) I circled around three interconnected industrial buildings, looking for a sign of Promupak's presence. One very helpful device that exists for Irkutsk is a computer program called Double-GIS, which allows you to map the exact location of any building or business in the city, and find out the best way to get there by public transport. I knew that Promupak was near, but since it was below -20 Celsius, I resorted to calling them for directions. "We're behind a green door in the middle, on the side away from the bus stop." Once I made it through the unmarked green door, I found myself in a very warm, cluttered space comprised of several small rooms and a bigger area that had several pieces of machinery. As an aside, dressing for Siberian winter gets complicated because you have to choose between being prepared for the biting cold outside and sweating through your wool socks as soon as you step into any inside space, or risk freezing your extremities on the way to that bus around the corner. I would never be able to give up my wool socks, but many Russian girls continue to run around the streets of Irkutsk in high-heel boots and short jackets throughout the entire winter. I get cold just watching them navigate sidewalk ice and snow piles.

Oleg, an energetic, short red-haired man with a slight paunch, met me at the door, took my hat and coat, and took me down the hallway to a small office room, where he called on his assistant design consultant Veronica to bring us some tea. He seemed talkative from the very beginning, but once I mentioned that my interest in his business went beyond wanting to recycle our household plastics, he became even more exuberant. After I began recording he leaned into the recorder to repeat his description of the head of Russia's government, "that dirty cop." But, as I've encountered on other occasions, the idea of a publication abroad was not the most interesting possibility to him. "Go ahead and write it, but the most useful thing would be to write an article here, to reach our governor [Dmitry Mezentsev]. He's alright." Did he mean Mezentsev is a good governor? Oleg winced slightly. "No, maybe not good, but new. Still receptive to new ideas. The other ones were more interested in hunting."²

My question about support from the local administration set off a speech that covered recycling factories in Astana, Kazakhstan, expensive jumpsuits by Bosco, a Russian-held luxury sports clothing company which has been outfitting the Russian Olympic team, and organizational

² The Irkutsk Region Legislative Assembly appointed the current governor in June 2009 after his predecessor, Igor Yesipovsky, died in a helicopter crash not far from the city in May 2009. Despite the official statement that Yesipovsky flew out to inspect the future special economic zone, many speculated about the circumstances surrounding his death. Yesipovsky was known as an avid hunter, he and his companions did not register the flight, and took a private helicopter belonging to a business acquaintance. Rumors that rescuers found charred guns at the scene of the crash only added to the theory that Yesipovsky was illegally hunting bears on the territory of the Pribaikalsky National Park, where the helicopter crashed. Russian politicians have a history of indulging in poaching, treating national parks and reserves as their private hunting grounds.

President Dmitry Medvedev nominated Mezentsev, a former St. Petersburg colleague of Prime Minister Putin, for the governor's post after the Irkutsk Assembly submitted a list of four local candidates. Mezentsev headed St. Petersburg City Hall's Media Committee from 1991 to 1996. Prior to becoming governor he served as deputy speaker of the Federation Council, as well as a representative of the Irkutsk region.

problems of waste management in Russia. “We need a systematic approach [to the problem of waste]. It does not exist now. Our administration needs to study waste processing from a scientific point of view, but they are more interested in self-enrichment. In Kazakhstan they set aside some space nearby Astana, built a number of factories, some of which recycle paper, some plastic, and started selling it abroad for good money. But for our officials it’s easier not to build a factory but to buy an additional piece of land and just bury the trash.” Oleg brought up recycled fleece as one of the examples of how one can make money off things that currently end up on curbsides and in landfills. “Last time I was in Moscow I saw a Bosco jumpsuit for about 20,000 rubles. It’s made out of acrylic, a synthetic plastic thread — that PET symbol you see on plastic cups. If one plastic bottle costs 5 rubles, and you need five or six of them to make a fleece shirt, which you could sell if not for 20,000 rubles, but for at least 500, calculate the profits for yourself.”

Oleg’s math was not entirely correct. As I found out later, it takes 25 two-liter plastic bottles to make a fleece garment. But the overall idea certainly made sense to me. When one mentions fleece, I think of the pricey Patagonia clothing for the outdoorsy types and not the “type of hair found on sheep, yaks, alpacas, some goats, rabbits, and several other types of animals,” i.e. the original. The word “fleece” has come to mean a warm polyester shirt even in Russian — a *fleeska*, as my friends here say. In fact, since 1993 Patagonia has been making “recycled fleeces” (US\$85 and up), which it markets to the environmentally conscious crowd: “The post-consumer recycled Synchronia fabric is made from recycled PET bottles that would otherwise end up in landfill sites. The electricity used in the manufacturing process is bought from renewable electricity plants (some Patagonia shops use wind power or photovoltaic cells).” You can also keep two and half PET bottles out of a landfill by purchasing a pair of Patagonia winter shoes, lined with recycled PET fleece. A small contribution from one person, but Patagonia’s spokesperson recently reported that their bottles-to-fleeces program has kept more than 86 million soda bottles from landfills. The Clean Air Council says Americans throw away 2.5 million plastic bottles every hour. This means that Patagonia neutralized a whopping 34.4 hours worth of our plastic bottle waste.

In recent years, the number of U.S. plastics recycling businesses has nearly tripled. More than 1,600 businesses are involved in recycling post-consumer plastics.³ As I did

research for this newsletter, I found some very interesting companies, including one, TerraCycle, that transforms a surprisingly wide variety of our trash (from usual paper and plastics to cookie and candy bar wrappers, potato chips bags, and drink pouches) into backpacks, flower pots, bags and totes, pencil cases, waste baskets, and clocks. Moreover, TerraCycle encourages kids (and adults) to organize waste-collecting “brigades,” covers shipping for collected trash, and donates 2 cents for every collected drink pouch, Lay’s bag, or Elmer’s glue stick to schools and non-profits. TerraCycle’s website, www.terracycle.net, lists the kinds of trash they take and hundreds of “up-cycled” products they make out of it — for sale at places like Target, Wal-Mart, and the Home Depot.

Oleg’s operation does not have nearly the same scope as TerraCycle. Promupak takes (mainly) industrial and (some) consumer plastic, washes it, and grinds it into pellets, which then can be sold to other manufacturers or used in house. Stacks of sample plastic drinking cups and sour cream containers sat around the tables and shelves at Promupak, and Oleg complained about the low price buyers offer for his products. As he demonstrated a disposable coffee cup to me, the kind I’ve seen in a local pizza chain, he said, “I have to sell a piece for twenty or thirty kopeks each when they mark it up to two rubles! But I can’t demand much more because then they’ll switch to some other supplier.” The cup had brown plastic on the outside and white on the inside. Oleg said that under existing regulations he had to manufacture the inside part out of new material, but could use recycled plastic for the outside.

It seemed that recycling of industrial plastics, being the more profitable kind, had its share of competition. As one Irkutsk processor told me, “Do you know that more than a hundred of us exist today in the city?” That’s quite a change from just a few years ago, when not more than a couple of recycling businesses operated here, but the market could handle more. “Try to get credit,” said Oleg at the end of our conversation. His assistant, Veronica, chimed in: “As soon as Medvedev began talking about helping small businesses, problems started — one inspection after another. The banks don’t give credit, only fake commercials. They just try to get us to come in and give them our deposits. For half a day we don’t work — it’s the tax offices, customs, banks. When the IRS moved, they lost three of our reports, and it was our fault. They told us, ‘why don’t you pay the 70,000 rubles until this gets cleared up,

³ www.Earth911.com; see also American Chemistry Council’s factsheet, <http://www.americanchemistry.com/plastics/doc.asp?CID=1581&DID=6012>

According to the Beverage Marketing Corp, the average American consumed 1.6 gallons of bottled water in 1976. In 2006, that number jumped to 28.3 gallons. Today, 80 percent of Americans have access to a plastics recycling program. More than 2.4 billion pounds of plastic bottles were recycled in 2008. Although the amount of plastic bottles recycled in the U.S. has grown every year since 1990, the actual recycling rate remains steady at around 27 percent. See www.Earth911.com

However, the 2008 U.S. National Post-Consumer Plastics Bottle Recycling Report stated that the actual recycling rate for post-consumer plastic bottles was up, from 24.4 percent in 2007. Perhaps the discrepancy can be explained by the fact that actual “resin sales” went down, from 9579 million pounds in 2007, to 8930 million pounds in 2008. According to the Report, the 19-year compounded annual growth rate for plastic bottle recycling is 9 percent.

your money is not going to disappear. If anything, we'll recalculate how much you owe us."

Another impediment to starting your business, until this year, came from the complicated and expensive licensing requirements for processing businesses. On the one hand, tight regulations seem necessary for businesses that handle potentially toxic materials. On the other, the high cost of getting a license caused many recycling businesses here to operate illegally. As one licensed recycler explained to me, "They often don't know if they'll make a profit in this, so they try it for a year or two, see how it goes." Some small waste processing operations have supposedly been working without a license for ten to fifteen years.

The next day after visiting Promupak I ran into Alexander Mityugin, a successful — and licensed — entrepreneur from Bratsk, a city north of Baikal, who has the only official fluorescent light bulb recycling operation in the region. Improperly discarded fluorescent lights, electrical switches, thermometers, and other devices leach mercury, a highly hazardous substance that impairs neurological development in fetuses, infants, and children. Under Russian law, businesses have to properly dispose of a certain number of their mercury-containing bulbs (and pay 14 rubles per light bulb to the processor). But even so Mityugin does not make his money on light-bulb recycling. "There are over 1.5 million people in the Irkutsk region and about 3 million fluorescent light bulbs. In better times they have delivered about 600,000 light bulbs to me for recycling. Since Putin and Medvedev came to power, this amount has gone down by half." The reasons are several. There are not enough laws regulating mercury disposal in the region, and the ones that exist do not get enforced strictly enough. As for enforcement agencies, "They ask me: why should we work for you?" laughed Mityugin. "Back when control was tighter, I used to get 50, 60 trucks a day from Irkutsk. Now I'm only 40 percent busy, and it never went above 70 percent. They just throw everything out."

This conversation took place at a conference on waste disposal, organized by the regional ministry of natural resources for local municipalities. The organizers invited Mityugin and another business representative to give their perspective on the industry's problems. Alexander just won a regional government tender for "innovative technologies in waste recycling." The two-million ruble contract is for one of Mityugin's profitable recycling operations, transforming rubber tires into durable asphalt. As we listened to speeches by government officials, he went through his phone book and gave me contact information for agencies and recycling operations in the region, along with a running commentary on each entry. "He's a crook and a thief but he has a license. If you tell him you are here on an American grant, he'll run circles around you, maybe take you out to a nice dinner." "This business is half-criminal. All metal recycling has criminal ties." "These guys are a good example of an honest operation, and they are having financial problems." Sometimes he would add, without explanation, "Don't mention

my name if you call them." When a woman from a regulatory agency got up to speak, Alexander said, "She's stressed out and doesn't give a damn anymore. A few years ago the smartest government people went over to the business side, which made my work harder. If before I could put pressure on the directors [to comply with the recycling law], now the same people who were good at finding mistakes and fining companies are good at finding loopholes and avoiding the law. So the good [employees] got hired by companies, the bad ones got fired, and what we have left is the grey middle."

When I asked him about plastics (since he seemed to know everyone in the business), he said there were two types of crooks in that type of recycling. "The first operate without a license. The second add processed granules to food-grade plastic. You can't do that under existing standards, since melting plastic at high temperatures causes its molecules to break down, to degrade and release toxins."

But what about Promupak? "Never heard of them," replied Alexander. When I showed him the information brochure, he thought for a second and replied, "They must be the second type of crook." I remembered Oleg's brown coffee cups. He said he used a layering process to put food-grade plastic on the inside. Later, as I tried to make my way through industry materials on the use of recycled plastics in food containers, I came across an article from 1998 that stated, "Regulatory and practical considerations have made it extremely difficult to use recycled plastic in any kind of direct food-contact application." It mentioned "layering" as one of the three major technologies for making food-grade post-consumer plastic. Unfortunately, all three methods were described as "considerably more expensive than producing virgin plastic."

In the U.S. currently in order to be considered food-grade by the FDA, plastic must not contain any materials deemed harmful to humans. The FDA considers each proposed use of recycled plastic on a case-by-case basis. As of April 2009, an Irish waste-management company called Greenstar WES had claimed it had become the world's first commercial producer of food-grade recycled plastic. (Greenstar will supply plastic flake for Marks & Spencer's organic milk bottles.) But even 2009 press releases stated that only a handful of companies are able to produce food-grade plastic from post-consumer PET bottles, because of "a lack of quality PET feedstock and the high-cost in making the material to the specification required by the food industry. Although the food-grade material itself costs slightly less than virgin material, the technically intensive process requires a large amount of capital investment."

I thought of Oleg's small operation and plastic cups that have been accumulating in our kitchen. What were the chances that his "capital investment" has been up to FDA standards? I asked Alexander, but if this is illegal, how is Promupak getting away with it? They don't even try to hide the fact that their drinking cups are made with recycled plastic. "You were probably the first person to ac-

tually walk into their office and ask them how they make their stuff. The inspectors would get their 1,000 rubles at the door and leave.”

The inspectors have their own gripes. At the federal technical oversight agency in Irkutsk, the head of the licensing department did complain about non-complying businesses. “Quick profits trump everything. And then they say, I’d rather pay my lawyer ten times over to challenge your fine than pay you. As if we personally get this money!” But Tatiana and her colleague, with whom she shares an office, seemed even more upset about the constant changes in the environmental regulatory structure. As I’ve written before, since then-President Putin abolished the Russian Environmental Protection Committee in 2000, remaining environmental oversight and control agencies have experienced constant reshuffling, downsizing, and downright elimination. Tatiana painted a bleak picture in which Moscow assumed more and more control over everyday decisions by regional agencies. “They keep transferring us between ministries and agencies. In the process they transfer some of our [old] functions and some are left up in the air. And they give us less and less discretion. Sometimes we have to spend entire weeks writing reports to Moscow. It doesn’t even leave us time for inspections.” The constantly changing laws are another problem. Alexander mentioned to me earlier that as soon as you would get your documentation in order, you would have to redo it. Tatiana confirmed this, saying she feels bad for businesses: “Every December 31 they sit around and wonder what will change.” She also echoed Oleg and Alexander who said that the government needs to step in and help businesses. “Maybe the state needs to give them subsidies, or tax breaks. There are government contracts but it’s difficult to get into those programs and even then the money is not guaranteed.” Actually, one of the things that Mityugin tried to bring up at the waste management conference (to every ministry official who walked by) was the fact that he still had not received the two million rubles under his government contract.

Tatiana used Alexander as one of the rare examples of businesses that have benefited from state involvement. “Mityugin managed to start his business only because back in the day the regional environmental committee transferred some mercury-processing equipment to him. Back then we had so-called ‘environmental accounts.’ They got funded by fines for environmental violations. The moneys went to support environmental programs. These accounts got abolished, because allegedly the moneys were spent inappropriately. But now environmental fines go into the common regional budget, and environmental programs receive almost no funding.”

A woman who used to be the head of the licensing department at the federal technical oversight agency confirmed that Alexander’s initial success depended on government support. “The Bratsk administration took this more seriously [than Irkutsk]. They helped Mityugin with land, gave him some leeway. Many of our businessmen give in

before taking off the ground. If Mityugin ran into the same problems up there, he would not have succeeded.”

The Irkutsk administration seems interested in the problem of waste management. At least they do a good job of attending round tables and panels organized by local scientists and their international counterparts. But their good intentions often run into unforeseen obstacles. For example, two years ago local press reported that the Irkutsk administration had entered into a waste-management partnership with a Swedish community. The goal of the partnership was to utilize Swedish experience in collecting, sorting, and processing consumer waste (plastics, glass, and paper). The administration chose a ‘model’ area of the city, where waste containers would be placed, and began talks with potential recycling partners. Lack of financing delayed the project’s start by a year. By the time the city finally put promised waste containers in place, the project suffered one significant change. The administration gave up on sorting and recycling separated waste streams. Their reasoning? The people are not ready. But fancy new containers will benefit the public by keeping trash out of sight, underground.

When I called Ekaterina Boyarkina, the head of the Irkutsk environmental protection department, to ask about the change in recycling plans, she quickly responded, “What recycling? We have one general-use landfill for the city. It’s useless to separate waste right now because there are no large businesses that could recycle it.” But wasn’t the city discussing this very possibility with waste-processing businesses two years ago? “A container of this size with glass would be too heavy, you would not be able to lift it. Paper recyclers need clean material, not dirty post-consumer stuff. And with plastic there is not enough demand. Two years ago the demand was there. China would have taken it all.” She blamed the drop in Chinese demand for plastics on the economic crisis, said she had to run and hung up the phone.

And so at this point of my research I faced a dilemma. I could give our kitchen plastic to Oleg, and risk being part of a toxic chain leaching unstable chemicals into my surroundings. Or I could throw it out together with our regular garbage, knowing that it will join half a century’s worth of the city’s trash. The only official Irkutsk landfill has reached the height of a 12-story building, and will run out of space in two or three years. After a short discussion with my roommates, and with a heavy heart, I took our plastics to the dump.

Why care? Plastics are magical materials, versatile, light, durable, relatively hygienic and inexpensive to produce. That is, until you take into account their many impacts on human health and the environment. The percentage of consumer plastics in overall waste varies by country, and most of them are less toxic than industrial waste (more than 50 percent of consumer plastic waste comes from packaging), but they still present many problems. Toxic chemicals form during production of plastics;

manufacture of plastics uses up almost 8 percent of the world's annual oil production; plastic's environmental effects range from disrupting endocrine systems in humans (and animals) to clogging up oceans. One of plastic's most useful qualities, its inertness (meaning plastic does not react chemically with most other substances) also poses a huge environmental problem since plastic does not decay for centuries. Plastic revolutionized the world in many ways, giving us tires, saran wrap, cell phones and computer monitors, as well as hermaphrodite fish, frogs with missing or extra legs, millions of tons of waste, and plastic-filled oceans.

According to Waste Watch, a British "environmental charity dedicated to the reduction, reuse and recycling of household waste," the world's annual consumption of plastic materials has increased from around 5 million tons in the 1950s to nearly 100 million tons today.⁴ That's a lot of highly durable material, which has to end up somewhere. It is estimated that between 60 and 80 percent of all marine debris is plastic. Thousands of pounds wash up annually on Hawaii's "pristine" beaches. Sea animals and birds die in extremely high numbers from ingesting plastic items.

Have you heard of the Great Pacific Garbage Patch? A giant floating landfill composed of fine plastic chips (remnants of decomposed plastic items) covers an area twice the size of Texas, about 1,000 miles west of California and 1,000 miles north of Hawaii, in the area known as the North Pacific Gyre. Plastic bottles wash down into the Pacific from all surrounding continents and begin their journey to the Patch. Along the way they photo-degrade, meaning they break down into small pieces under the sun's UV rays. Ocean researchers say the soupy plastic mass that is the Great Pacific Garbage Patch weighs 3 million tons. Its plastic pieces move as far down as 300 feet below the ocean's surface. Apparently plastic now outweighs plankton six to one in the Great Pacific Garbage Patch.

How much more plastic can our air and water take before our food chain becomes completely toxic? As I kept reading, it seemed that recycling did not provide the answer. It is a partial solution at best. The more we produce, the more we will have to recycle, and even recycled plastic will reach a point of no return, when we will have to throw it out. The only viable solution is to cut down on our production and consumption of plastic.

One of the voices in support of this position comes from — surprise — Wal-Mart. The giant retailer has been

developing various waste-reduction strategies for several years now, in response to rising costs of energy and raw materials, and consumers' interest in the concept of environmental sustainability. Last September Wal-Mart announced a commitment to reduce its global plastic shopping bag waste by an average of 33 percent per store by 2013. A 2008 study on packaging efficiency, prepared for Wal-Mart by a group called Use-Less-Stuff, stated: "Reducing the use of fossil fuels has taken on national security as well as economic, political and ecologic dimensions. The potential for economically stable, environmentally friendly, more patriotic products obviously has significant allure, as evidenced by the increased interest in goods made from "renewable resources" such as corn, rather than from "non-renewable resources" such as petroleum and natural gas." I.e., it makes economic sense for Wal-Mart to control their costs and please consumers by reducing their waste.

The Wal-Mart study by Use-Less-Stuff is one of the many sources that say recycling does not grow fast or large enough to offset increases in waste generation. They suggest "source reduction," or "delivering more product for the same or lesser amounts of packaging." To Wal-Mart, that means using flexible packaging instead of rigid containers, concentrates, dry mixes, and refills instead of regular-strength products, and larger-sized packages. To me, "source reduction" means avoiding plastic as much as possible. I've been considering taking a glass jar to the local market next time I decide to buy some sour cream. It will only require a little extra planning. And now I have a visual incentive to do so.

At the same time as I went around Irkutsk talking to plastic recyclers, I stumbled onto an article in the Russian issue of *Esquire* devoted to Midway Atoll albatrosses. Midway, which lies in the middle of North Pacific, houses the world's largest colony of albatrosses. The photographs in the article depicted bird skeletons, some with feathers and beaks, with plastic in place of the birds' stomachs. Tens of thousands of baby chicks die on Midway each year because adults scoop up bright bits of plastic from the surface of the ocean and feed it to their young. At first I could not believe these photographs were real. But Chris Jordan, the photographer who took those pictures, states that "none of the plastic in any of these photographs was moved, placed, manipulated, arranged, or altered in any way. These images depict the untouched stomach contents of baby birds in one of the world's most remote marine sanctuaries, more than 2,000 miles from the nearest continent." You can see our new brave plastic world for yourself at <http://chrisjordan.com/>. □

4 <http://www.wasteonline.org.uk/resources/InformationSheets/Plastics.htm>

Current ICWA Fellows

Elena Agarkova • RUSSIA

May 2008 - 2010

Elena is living in Siberia, studying management of natural resources and the relationship between Siberia's natural riches and its people. Previously, Elena was a Legal Fellow at the University of Washington's School of Law, at the Berman Environmental Law Clinic. She has clerked for Honorable Cynthia M. Rufe of the federal district court in Philadelphia, and has practiced commercial litigation at the New York office of Milbank, Tweed, Hadley & McCloy LLP. Elena was born in Moscow, Russia, and has volunteered for environmental non-profits in the Lake Baikal region of Siberia. She graduated from Georgetown University Law Center in 2001, and has received a bachelor's degree in political science from Barnard College.

Pooja Bhatia • HAITI

September 2008 - 2010

Pooja attended Harvard as an undergraduate, and then worked for the *Wall Street Journal* for a few years. She graduated from Harvard Law School. She was appointed Harvard Law School Satter Human Rights Fellow in 2007 and worked as an attorney with the Bureau des Avocats Internationaux, which advocates and litigates on behalf of Haiti's poor.

Eve Fairbanks • SOUTH AFRICA

May 2009 - 2011

Eve is a *New Republic* staff writer interested in character and in how individuals fit themselves into new or changing societies. Through that lens, she will be writing about medicine and politics in the new South Africa. At the *New Republic*, she covered the first Democratic Congress since 1992 and the 2008 presidential race; her book reviews have also appeared the *New York Times*. She graduated with a degree in political science from Yale, where she also studied music.

Ezra Fieser • GUATEMALA

January 2008 - 2010

Ezra is interested in economic and political changes in Central America. He is an ICWA fellow living in Guatemala where he will write about the country's rapidly changing economic structure and the effects on its politics, culture and people. He was formerly the deputy city editor for *The News Journal* (Wilmington, DE), a staff writer for *Springfield Republican* (Springfield, MA) and a Pulliam Fellow at *The Arizona Republic*. He is a graduate of Emerson College in Boston.

Derek Mitchell • INDIA

September 2007 - May 2010

As a Phillips Talbot Fellow, Derek will explore the impact of global trade and economic growth on Indians living in poverty. He has served for the past year as a volunteer for Swaraj Peeth, an institute in New Delhi dedicated to nonviolent conflict resolution and Mahatma Gandhi's thought. Previously he was a Fulbright scholar in India at the Gandhi Peace Foundation. He has coordinated foreign policy research at George Washington University's Institute for Communitarian Policy Studies and worked as a political organizer in New Hampshire. Derek graduated with a degree in religion from Columbia University.

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