SKIP THE SLIP

Environmental Costs & Human Health Risks of Paper Receipts with Proposed Solutions



Green America®

TABLE OF CONTENTS

EXECUTIVE SUMMARY 2
THE PAPER PROBLEM 4
ENVIRONMENTAL IMPACTS OF PAPER RECEIPTS 5
HUMAN HEALTH IMPACTS OF THERMAL PAPER 9
THE SOLUTIONS 12
DIGITAL RECEIPT OPTIONS 14
PHENOL-FREE PAPER 19
LEADERS & LAGGARDS OF RECEIPT PRACTICES 22
HOW TO TAKE ACTION 23
SOURCES 27

Co-Author: Beth Porter, Green America Climate & Recycling Director
Co-Author: Ayate Temsamani, Green America Climate Campaigns Fellow

Editor: Todd Larsen, Green America Executive Co-Director
Layout: Alec Badalov, Green America Digital Communications & Design Coordinator

Green America
1612 K Street NW, Suite 600
Washington, DC 20006
GreenAmerica.org

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Contact Beth Porter at bporter@greenamerica.org with questions.

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EXECUTIVE SUMMARY



WHY RECEIPTS?

Paper receipts are tiny items with significant environmental impacts and health risks for workers and customers. Every year in the United States, receipt use consumes 10 million trees, 21 billion gallons of water, and generates 686 million pounds of waste and 12 billion pounds of CO2 (1). Extraction and use of these resources takes a toll on the climate, a reminder that we need to continue replacing outdated, wasteful items with innovative solutions.

Receipts also pose considerable health risks to the people who regularly are in contact with them. An estimated 93 percent of paper receipts are coated with Bisphenol-A (BPA) or Bisphenol-S (BPS), known endocrine-disruptors which serve as color-developers to make the text appear on receipts (2). When we touch receipts, the chemical coating is absorbed into our bodies through our hands in mere seconds. Researchers at the New York State Department of Health documented connections between BPA exposures and developmental and neurological problems (3).

BPA impacts fetal development and is linked to reproductive impairment, type 2 diabetes, thyroid conditions, and other health concerns. Companies have sought out “non-BPA” paper, but the typical replacement is BPS, a similar chemical which research indicates has similarly detrimental effects as BPA (4).

Retail employees are at the greatest risk, as studies show workers who have regular contact with receipts have over 30 percent more BPA or BPS found in their bodies, and many employees may exceed the European Union’s limit for the safe amount of BPA to absorb in a day (4 micrograms per kilogram of body weight per day) (5). While it is uncertain precisely how much of this BPA and BPS in workers’ bodies is directly influenced by contact with thermal paper receipts, many retailers have made the choice to move away from using these papers in their stores.

THE SOLUTIONS

There are many existing solutions which eliminate the need for phenol-coated paper.

- Dynamic receipts are digital receipts used to provide future marketing opportunities with customer consent.
- Card readers for smartphones and tablets offer paperless transactions that are seamless and secure.
- Digital receipt software is available that works with various point of sale hardware, meaning companies do not need to make changes to their registers.
- For customers who desire a printed copy of their receipt, phenol-free, recyclable paper should be offered by companies that care about worker and customer health.

In this report, we discuss these different solutions, their costs and companies providing these alternatives and retailers successfully using them.



THE PAPER PROBLEM

Despite a decline in some paper use due to the rise of digital technologies, we are still producing mountains of paper waste. Paper use is going up globally, exceeding 400 million metric tonnes per year . China, the U.S., Japan, and Europe are the largest consumers (6). In North America, we contribute more than our fair share, with the average paper consumption at 215 kg/person (four times the global average), whereas Africa accounts for only 2 percent of global use and a mere 7 kg/person (7).

Individuals and institutions are going paperless in some ways, but we are still producing and disposing of a massive amount of paper. Sometimes when we decrease our paper use in one area, the consumption shifts to another paper product (for example, we are using less office paper, but online shopping and delivery packaging has increased). Paper production (particularly in cases where 100 percent of the used fiber comes from forests that are not certified by the Forest Stewardship Council (FSC) and is treated with toxic chemicals) can have long-lasting consequences for the environment and communities, from deforestation to manufacturing that causes water and air pollution. Some paper and pulp companies have violated land rights of indigenous peoples, and devastated communities (8). Worldwide impacts on communities from production can include environmental degradation, pollution, destruction of sacred lands (9) and negative impacts on local economic sectors like fishing and tourism (10).

The worldwide paper recycling rate hovers around 58 percent, and while the U.S. recycling rate is above the global average at 64 percent, it trails Australia (85 percent), Japan (80 percent), Europe (72 percent), and Canada (70 percent) (11). Recycling rates can be challenging metrics, since different entities use varying definitions and methods of measuring, however these numbers offer some insight into how much paper recycling has improved, and how much further there is to go.

SO, WHAT MUST CHANGE?

A key step of waste reduction is targeting where a material is being used that serves little purpose, can be replaced with environmentally preferable alternatives, or is discarded after only brief use (and is not recyclable). By changing a process or design to curb waste, we can reduce consumption at the source and institute a more renewable, longer-lasting replacement. Identifying unnecessary, wasteful items to eliminate from a business can save more than the material itself. Massive resources are used for even the smallest of items when they are produced in the billions, and for a clear example we need look no further than the pervasive paper receipt.

ENVIRONMENTAL IMPACTS

Paper receipts are those ubiquitous slips of paper nestled at the bottoms of shopping bags, in coat pockets, or collecting dust in drawers. We even throw them into the garbage seconds after they are handed to you at the checkout counter. The slim size of paper receipts doesn't convey the significant environmental and health impacts they leave behind after we've tossed them aside.

In the US, 10 million trees and 21 billion gallons of water are consumed each year in the creation of paper receipts, generating 686 million pounds of waste and 12 billion pounds of CO_2 (12). These small paper slips collectively undermine businesses' attempts at sustainability because of their environmental impacts from production to disposal.

We estimate if just one company as large as Walgreens – with nearly six million customers every day – ends its use of paper receipts, over 55,000 trees will be saved each year. This does not account for customer copies, receipts longer than 6 inches, and other receipt duplicates). Even so, this change would save 58.8 million gallons of water and keep 17.6 million pounds of CO_2 from entering the atmosphere (13).



FORESTS



Forest ecosystems are essential to a healthy, functioning planet. Forests produce fresh oxygen and are also powerful agents of carbon sequestration. By absorbing roughly 40 percent (14) of global fossil fuel emissions every year forests contribute greatly to battling climate change. At the same time, deforestation accounts for 25 percent of global carbon emissions caused from human activities (15). In short, deforestation is slicing away at forests' potential to sequester much more carbon.

When we log forests to produce paper and wood products or to clear land for agriculture, these carbon sinks become carbon emitters. Dogwood Alliance reports that logging is diminishing the net forest carbon sink in the US by at least 35 percent and if soil emissions from logging were included, this number would be "significantly higher" (16). Globally, forests are pulling enough carbon from the atmosphere to equate to 25 percent of anthropogenic emissions, but in the United States, forests are only removing 13 percent of our country's annual carbon emissions (17). Dogwood Alliance also reports our nation's forests are still operating at a carbon deficit, since new growth has not absorbed past emissions from forest loss.

To satisfy paper and wood demands, tens of millions of acres of biologically diverse forests have been destroyed and converted to mono-culture tree plantations made up of one species (18). A wider range of tree species, as we see in natural forests, sequesters more carbon than single-species forest (19). Planting trees is a noble effort that yields positive results and is a valuable tool, but it is still a mitigation strategy. Proposals to plant enough trees to take care of all carbon emissions ignore the fact that we'd have to use unsustainable volumes of water and land to maintain these carbon sequestering tree plantations (20). To address the root of the problem we must cut overall emissions, which means reducing pressure on forests by curbing production of wasteful materials and leaving diverse, natural ecosystems intact.

WATER



Water is essential for more than just quenching thirst. It sustains ecosystem functions, including nourishing the plants which produce oxygen. We need fresh water for our food production and to maintain sanitary conditions in communities. Every living thing on the planet needs water to survive.

Until we experience heavy contamination or drought, it's easy for people in the developed world to take for granted what seems to be endless water flowing from a tap. But, less than one percent of fresh water on the entire planet is suitable for human use and consumption (21). Water insecurity is already impacting communities worldwide. As our population escalates, so does the need for this critical resource, but 783 million people currently do not have access to clean water (22). If our current trends of population growth and usage continue, the UN estimates by 2030, our need for water will surpass the steady supply by 40 percent (23). In order to meet these growing pressures for fresh water, and to address the additional pressures on supply that result from climate change, we will need to greatly reduce our wasteful water practices.

WE COULD SAVE 21 BILLION GALLONS OF WATER EVERY YEAR BY REDUCING PAPER RECEIPTS. THAT'S THE EQUIVALENT TO OVER 15 MILLION CLOTHES WASHERS OPERATED PER YEAR.

GREENHOUSE GAS EMISSIONS



Greenhouse gases are released through each phase of extracting new resources used to produce thermal paper receipts, including the emissions from mills and printers to transport and distribute this outdated product. Producing 640,000 tons of paper just for receipts every year emits an estimated 12 billion pounds of CO_2, the equivalent of over 1 million cars on the road (24). From harvesting and processing the wood pulp to producing the millions of gallons of oil used in their production, paper receipts have substantial climate impacts (25).

Emissions also result from the disposal of receipts. Individual paper receipts generate 686 million pounds of waste. The disposal of receipts in landfills contributes to the paper and wood products making up over one quarter of landfills, releasing methane during decomposition (26). Methane is a potent greenhouse gas with over 80 times the heat-trapping power of carbon dioxide over two-decades (27).

We need to keep paper items like receipts out of landfills because of their potentially negative impacts during decomposition, but also because this disposal wastes the paper fiber. By not putting paper products back into the recycling stream where they could possibly be used again for new products, we lose the possibility to fill demand with secondary materials, meaning we must extract more primary materials. We need products that are valued in the recycling system, so they can be marketed and reused, but thermal paper receipts are not valued due to their coating.

Thermal paper is technically as recyclable as other paper items, in that the fibers can be utilized to make new paper products, but there are health concerns that are unique to recycling thermal papers. Well-meaning consumers who try to recycle receipts in their municipal recycling can contaminate other recovered fiber. Substances used to coat the receipts can be transferred into new recycled products…and no one wants to use toilet paper with traces of endocrine-disrupting chemicals. Seventh Generation, which sells a wide range of recycling paper products, has addressed this issue on its website. It periodically tests household paper products for BPA and it reports the testing has uncovered a small amount of the substance was found present in those products. The company states, “our research shows that the likely source of this BPA is the thermal papers used for cash register, ATM, and other receipts, which are often made with BPA (28).”

HUMAN HEALTH IMPACTS

Paper receipts are not only detrimental to the environment, they can also negatively impact human health. Thermal paper requires heat and a coating to display purchase information on the receipt. An estimated 93 percent of receipts in the U.S. are coated with phenol chemicals (29), Bisphenol-A and Bisphenol-S (BPA and BPS), that serve as color developers for the paper. These phenol coatings are easily transferred to anything that touches the paper in mere seconds, including our hands. The chemicals then pass through our skin and into our bodies, acting as endocrine disruptors. Researchers at the New York State Department of Health documented connections between BPA exposures and developmental and neurological problems (30). BPA impacts fetal development and is linked to reproductive impairment, type 2 diabetes, thyroid conditions, and other health concerns.

In response to public concerns of BPA, companies began printing receipts with BPS-coated thermal paper, a similar chemical. A 2015 report that reviewed multiple studies found that BPS is as significant of an endocrine-disruptor as BPA, even though there is less awareness surrounding its potential harms amongst the public (31). As of 2014, nearly 81 percent of Americans were shown to have detectable levels of BPS in their urine (32), and nearly 90% of human exposure to BPS is from thermal paper receipts coated with the substance (33).

Studies show people's blood levels of BPA spike after they touch receipts coated with the chemical. In a 2010 test commissioned by Environmental Working Group, two-fifths of paper receipts were on heat-activated paper that were between 0.8 to nearly 3 percent pure BPA by weight. The receipts came from major retailers, grocery stores, convenience stores, gas stations, fast-food restaurants, post offices and automatic teller machines (ATMs). The study found major retailers using receipts containing BPA in at least some of their outlets include McDonald's, CVS, KFC, Whole Foods, Walmart, Safeway and the U.S. Postal Service (34).

In early 2018, the Ecology Center produced findings showing the prevalence of BPA and BPS in receipts. Led by Gillian Zaharias Miller and Lauren Olson, the team collected hundreds of paper receipts submitted by consumers, removed duplicate copies from the same companies, and tested each receipt using a spectrometer.





HUMAN HEALTH IMPACTS CONT.

The majority (75 percent) were coated with BPS, BPA made up 18 percent, 3 percent were inconclusive, 2 percent had no coating, and 1 percent were from Best Buy stores using an alternative coating (35).

There isn't solid consensus on the safe level of BPA or BPS we can absorb in a day. The "tolerable daily intake" (TDI) represents the maximum amount of a substance that humans can absorb without risking their health. In 2015, the European Food Safety Authority declared previous TDI limits for BPA (50 micrograms per kilogram of body weight per day) were set too high and lowered the limit to 4 micrograms (36). In early 2018, the European Commission issued a ban on BPA in thermal paper to begin in 2020 and has asked the European Chemicals Agency to study the effects of BPS (37).

Meanwhile, in 2008 the U.S. Food and Drug Administration (FDA) set the daily limit at 50 micrograms per kilogram of body weight (38). The National Toxicology Program released part of a long-term, multi-year study meant to assess the safety of BPA. Based on this partial and incomplete data, in early 2018 the FDA declared BPA exposure had "minimal effects," but did so without adequate scientific evidence to back up the claim (39). The study data was not peer reviewed, and the methodology of the study was not designed to detect endocrine disruption. There has been no announced U.S. national initiative to tackle phenols in thermal paper, such as the EU ban.

On the state level, Connecticut was the first state in the U.S. to ban BPA in thermal receipt paper on the grounds of health concerns in 2011 (40). Other states have banned BPA in baby bottles and similar containers, and the FDA banned the use of BPA in baby bottles nationwide in 2012 (41). But no federal policy initiatives exist to end phenols in thermal paper, and no other states have enacted bans except Connecticut.

HUMAN HEALTH IMPACTS CONT.

A 2010 study conducted by the University of Missouri, commissioned by the Environmental Working Group, revealed that the total mass of BPA on a receipt is 250 to 1,000 times greater than the amount of BPA found in a can of food or baby formula, or in plastic baby bottles (42).

Researchers will continue to assess the full impacts of BPA/BPS, and agencies will mull over what they consider the safe limit is for people to absorb. Meanwhile, there is a central group of people who experience the greatest exposure to thermal paper coating. Workers in regular contact with receipts have over 30 percent more BPA or BPS in their bodies than other adults, based on urine tests (43). Many employees may be regularly exceeding the European limit for BPA of 4 mg per day through contact with thermal paper receipts (44).

Based on the health risks of phenol-coated thermal paper and the environmental impacts of generating paper receipts, Green America has prepared the following solutions. Implementing phenol-free paper is an essential immediate step to ensure worker and customer health, however it is our conclusion that the long-term solution is to reduce overall production of paper receipts. By promoting the use of digital receipts, we can conserve resources and make transactions more secure and efficient.



THE SOLUTIONS



Innovative companies are moving to digital receipt options or allowing customers to skip receipts altogether. According to a 2012 report from Epsilon International, one third of retailers surveyed offer digital receipts, and half of those do so at all their store locations (45). These retailers report that the driving reasons for going digital are: customer convenience, corporate goals to reduce paper use, consumer protection (digital receipts are easier to trace and result in less identity theft), and other cost-saving needs. But, this still leaves a large number of retailers only offering paper receipts, most of which are coated with BPA or BPS.

Toast, Inc., a company offering restaurant technology, released survey results in 2017 showing the shifting attitudes towards digital processes in restaurants. Compiling responses from 450 restaurant owners, the survey included owners and patrons of diners, fast food establishments, cafes, bars, and fine dining. The results showed 49 percent of millennials aged 18-39 prefer email or text receipts. Of customers in the 40-59 age group, 37 percent preferred digital, and of those in the 60+ age group, 26 percent preferred digital (46). The survey results support making digital receipts available to all customers while continuing to offer recyclable, phenol-free paper receipts available for customers requesting paper.

Retailers can take the steps below to improve receipt practices and ensure transactions are efficient, secure, and better for workers and the environment. The steps provide an overview, and are not meant to provide an exhaustive list of all retailers and software companies offering these solutions. Green America can advise your company on ways to best implement a digital receipt program to achieve environmental and financial savings.

OFFER A "NO RECEIPT" OPTION

For many transactions, particularly cash-based transactions at convenience stores or fast-food restaurants, and any other low-dollar transactions where there is little potential for customer returns, only providing receipts to customers that request them is the best option. At the beginning of each transaction, customers can be asked, "Will you need a receipt?" Then retailer would only print (or email) a receipt to customers that answer affirmatively. Green America wants to see paper receipts as an opt-in, so the default will be no receipt, or digital where a receipt is needed.

Digital receipts still have an environmental impact, as an average email (including one for a digital receipt) is estimated to have a footprint of 4 grams of carbon dioxide (47). Since a mature tree can absorb roughly 21,772 grams of carbon dioxide every year, by keeping trees in forests rather than using them for paper receipts, we estimate that one tree can accommodate the emissions of over 5,443 digital receipt emails.

Additionally, if individuals reduce the reliance on fossil fuels to power their devices — and urge companies to power networks and data centers on clean energy — the impacts of digital receipts will be even smaller. While the environmental impacts of a paper receipt vary depending on length of receipt and other factors, in general paper receipts have a higher environmental footprint than digital.





DIGITAL RECEIPTS

For companies that need to regularly provide receipts, Green America strongly recommends offering digital receipts as the default option to curb environmental impacts. Customers can choose to have a copy of their receipt emailed to them, which eliminates the need for paper receipts and improves the security and efficiency of transactions. By offering this service as the primary alternative to "no-receipt", customers are encouraged to take a simple, convenient step that can go a long way in reducing waste.

Digital receipts also provide benefits to consumers and protect merchants. With an electronic receipt system, it's much easier for the customers to retain their receipts. It improves customer convenience and reduces fraudulent activities. In fact, digital receipts are harder to counterfeit as they are directly linked to the point of sale system. Paper receipts can easily fall out of peoples' pocketbooks or pockets, which creates litter and opens the door to fraud if a receipt falls into the wrong hands.

Digital receipts can also be used to enhance record-keeping, especially since the IRS has allowed digital receipts to be provided in response to audits since 1997, provided the receipts are clear and legible. For business owners as well as customers, record-keeping can easily become a digitized process. Existing software can digitize and archive paper-based receipts and archive digital receipts. Digital systems allow individuals to total up expenses for the past year and search for receipts easily when filing taxes or responding to an audit. For businesses, digital systems help maximize tax deductions and protect them if they are audited. Shoeboxed, is an example of a digital records software company and has price options ranging from $15 to $125 per month to cover subscription fees, depending on the number of receipts submitted.

DIGITAL RECEIPTS, CONTD.

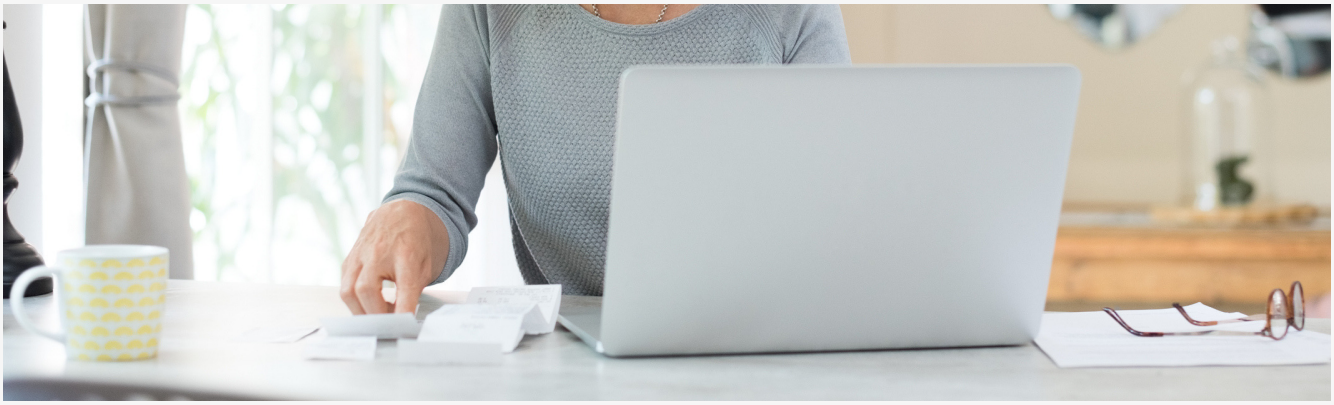
It is important to market digital receipts to customers as an attractive option and make it easy to participate. Companies offering digital receipts might not see a large percentage of customers participating if the program is designed as an opt-in with multiple steps. CVS is a company with a reputation for its lengthy paper receipts, but many customers may be surprised to learn it offers a digital option. But, the customers have to know about the digital option and request it to begin use. CVS's 2017 annual report stated 4.5 million customers use the digital receipt program, and this resulted in saving the company $200,000 in paper and other expenses (48). But, this represents only 7 percent of their 62 million Extracare members and millions more casual shoppers (49). CVS should take steps to increase participation beginning with making it the default option.

Digital receipts are also price-competitive with paper receipts. Use of digital receipts lessens the costs of paper, ink and other machinery needed for paper receipts. Digital receipts only require machinery that most businesses already own, such as registers, point of sales equipment, computers, tablets or smartphones. Some digital receipt options require the purchase of card readers or other products, yet such products remain price competitive and many only involve a one-time investment. In the following sections, we provide sample price points for digital and non-toxic paper options. All prices listed below are from companies that have made this information publicly available.

There are different types of digital receipts depending on the uses a company needs to fill or the distribution it prefers using (sending the e-receipt to email, an app, etc.).



DYNAMIC DIGITAL RECEIPTS



An array of digital receipt options exists, and companies can provide either a simple e-mail, with no additional marketing information, or provide a dynamic email receipt. Dynamic digital receipts are used to provide future promotions and offers to the customer, gather relevant feedback, and develop digital marketing strategies. Companies can also integrate dynamic digital receipts with social media to build their brand and increase data targeting since a digital receipt sent after any transaction keeps businesses' databases current and up to date.

Dynamic digital receipts may include more than just transaction information and also include targeted promotions, social media platforms, and location updates, which could all increase sales and profits. They can also provide another stream of communication between the customer and the retailer but is most beneficial for all involved when customers are explicitly asked to opt into further messages from the company.

Transaction Tree, a company specializing in digital receipts, requires that customers opt in for marketing features. Its CEO, Jason Shapiro, has warned retailers of the repercussions from using “intrusive marketing efforts (50).” A quick way to lose the respect and trust of a customer is by bombarding them with unsolicited messages. The company discourages retailers from assuming that a customer opting in for digital receipt is automatically opting for further marketing messages, and notes the company already has a marketing opportunity in the digital receipt email itself. It’s possible to design the single digital receipt message to include promotional deals and marketing information that encourage the customer to return for a future purchase.

Retailer Users of Dynamic Receipts: Apple, Best Buy, CVS, The Container Store, Macy's, Nordstrom, Urban Outfitters, Whole Foods.

Software Vendors: FlexReceipts, NeatReceipts (annual subscription costs ranging from $79.99-$249.99), Square, Inc. (hardware costs range from $49-$999), Transaction Tree.

CARD READERS (WITH E-RECEIPTS) FOR MOBILE & TABLETS



Another digital solution is using a card reader for mobile devices. Vendors can accept credit cards and provide customers with receipts instantly, making transactions seamless and speedy. Such card readers are compatible with any mobile device, like smartphones and tablets. The readers send e-receipts and ensure secure transactions. As the customer's card is swiped or inserted, the information is securely sent to the merchant's bank which obtains the charged amount from the customer's bank or credit card account. Services like Apple Pay utilize contactless payments which typically require a customer's fingerprint, then the smartphone is held over the reader to begin the transaction.

In April 2018, MasterCard, Visa, American Express, and Discover stopped requiring that merchants obtain signatures for credit card purchases. The rise in credit card chip technology has resulted in a movement towards getting rid of receipts at many stores, and now with no verifying signature required, the move away from paper receipts is projected to increase. Merchants using chip technology have seen fraudulent charges drop 70 percent from 2015 and 2017 (51).

Card readers allow for businesses of all sizes to benefit from using digital receipts. Green America's Green Business Network, comprised of 3,000 small-to-mid-size businesses, often demonstrates that small businesses are sustainability innovators in their fields. The Green Business Network helps small businesses go green, and we are encouraging our business members to adopt Square or Apple Pay as an easy way to lower their environmental impacts.
Retailer Users: Coffee Foundry, K. Hall Studios, Souvla, Wright Bros. Brew & Brew.

Contactless Software Vendors: Apple Pay, Android Pay

Mobile card reader vendors: Square, Inc. (charges 2.75% of transaction amount per swipe and 3.5% for each manual transaction), Clover Go, PayPal Here (2.7% per swipe and 3.5% for manual transactions).

INTEGRATIONS WITH EXISTING REGISTERS

One of the easiest ways for a company to move from paper receipts to digital is to use a product that can easily integrate with the company's existing registers. Point of Sale (POS) systems provide the software and hardware that allows both e-receipts or paper receipts to be generated. POS hardware includes a screen and keyboard at the check-out register, a barcode scanner, credit card reader, and a printer for receipts. Software creates and distributes the receipt, and it can "live" on-site through a business' computer system or can be cloud-based and operate through the internet. A cloud-based system avoids the extra cost of upgrading software or paying for licensing fees. The system relies on the internet, but sales can still be tracked when a connection falters and will sync once it reconnects. POS systems differ from credit card terminals, the machines with a keypad for pin numbers and a pen for signatures, since a terminals only function is to process payments, whereas a POS system provides a wider range of services.

A POS software system records and tracks when goods or services are sold to customers and can also track inventory and manage personnel information. The software obtains data from the register's printers, so all the receipts being sent to the printer can instead be configured into a PDF and then the receipts are sent as emails to customers. POS digital receipt systems work for companies using compatible print drivers.

Another strategy utilizes a 'plug and play' system that provides both software and hardware to retailers. Retailers simply unplug existing receipt printers and then insert the printer into the plug and play device where the digital receipt appears on the screen. Plug and play devices are very simple to use. Once plugged in, the receipt goes into the cloud and no app needs to be downloaded by the customer, because they receive the receipt via email. This technology can capture receipts instead of printing and digitizes them. These systems also provide analytics to retailers that track customers' spending patterns.

An additional method is the 'tap and go', which does not require customers to give their email address. Tillbilly offers "tap and go" terminals that are directly connected to POS terminals, which enables a customer to tap their Near Field Communication (NFC, a short-range wireless connectivity standard that allows communication between two devices once touched together) enabled card or phone and have the receipts sent to the TillBilly cloud-based storage tied to the ID of their NFC card of their phone. The digital receipts are securely stored, and customers can then retrieve their receipts at any time by logging into the TillBilly website, or directly through an app on their iPhone or Android-based smartphone if that is their preference.

Retailer Users: ALDO, GNC Live Well, In-N-Out Burger, Oakely, Shoe Carnival.
Software & Hardware Vendors: FlexReceipts, Star All Receipts, TillBilly.

NON-TOXIC PAPER



The Pew Research Center notes that in 2017, 77 percent of Americans owned a smartphone, which was a large jump from only 35 percent in 2010 (52). While smartphone usage has become the norm, there are still millions of customers who do not have smartphones, and many Americans do not have computers at home. In addition, even customers who have the latest technology may still prefer paper receipts.

If consumers request a paper receipt, companies should opt for non-toxic papers that don't contain BPA or BPS. There are a range of available alternatives to toxic paper receipts and a growing number of phenol-free paper receipts on the market. Generally, they use coatings like Vitamin-C, which are better for human health but also better for the environment, as they are recyclable and compostable in most areas.

PHENOL-FREE VENDORS

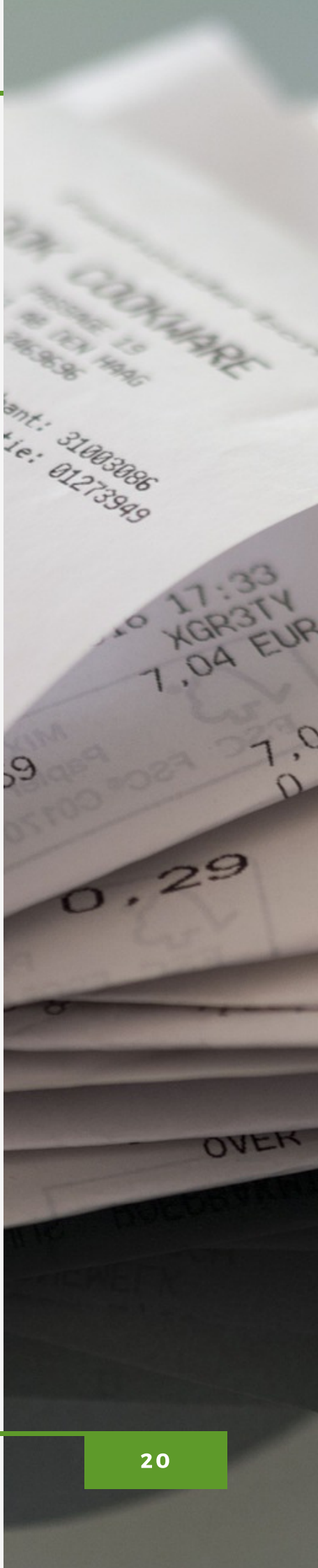
- Appvion – POS Alpha Free – This paper uses a vitamin C mixture, which gives a subtle shade of yellow to receipts (costs range from $29.90-$74.90 depending on the size of the roll). The yellow tint does not affect the visibility of the text and can be promoted to your customers as a sign the receipt paper is safe to touch.

- BASF - Pergafast 201 – Instead of using BPA or BPS coating, this is an alternative color developer and was the first commercial alternative to BPA when it was released in 2011. The substance is not easily absorbed through the skin, in contrast to BPA and BPS (53).

- Iconex 2ST™ – This new dual-printing process allows printing on both sides, which decreases the amount of paper roll needed by 50 percent and reduces the cost of buying paper rolls. It is also BPA and BPS free.

- Koehler– BLUE 4EST – Phenol free and uses polymeric coating that doesn't come off the paper like BPA/BPS. This paper uses a physical reaction to make text appear. When printing, heat applied to this paper activates the carbon black paper underneath which results in print appearing. Unlike phenol thermal paper, there is no chemical reaction involved. Koehler states this is the first thermal paper to be approved for direct contact with food.

- Koehler KT 48PF – Phenol-free paper that can be used with most thermal printers and provides receipts that last up to 10 years.





RETAILERS USING PHENOL-FREE PAPER

Best Buy: Receipts contain the Pergafast 201 color developer. Best Buy also offers e-receipts, which customers can request in store by joining their loyalty program.

Lidl Grocery: This German grocery company (which is opening stores across the U.S.) began using phenol-free receipt paper in June 2017 in the U.S. Lidl proudly states that it offered phenol-free papers worldwide throughout the company's existence.

MOM's Organic Market: MOM's (a supermarket chain in the Washington DC area) uses receipt paper coating made from Vitamin C, free of phenols (BPA and BPS-free). Customers regularly thank MOM's for using non-toxic receipts:

> "Thank you so much for using receipts that are phenol, BPA and BPS free! I love the comfort of knowing it is one less way in which harmful chemicals enter my body on a daily basis!"
> - MOM's Customer, Jenn Ford of Baltimore, MD

Trader Joe's: In 2018, Trader Joe's made the commitment to switch to receipt paper that is free of phenol chemicals (including BPA and BPS). It has identified phenol-free receipt paper, which it will begin using in its stores this year.

SELECT RETAILER RECEIPT PRACTICES

Company	Digital Receipts	Non-phenol Receipts	BPA/BPS Receipts
Best Buy	✓	✓	
Lidl Grocery		✓	
MOMs Organic Market		✓	
Apple	✓		
GNC Live Well	✓		
In-N-Out Burger	✓		
CVS	✓		✓
Macy's	✓		✓
Trader Joe's			✓
Whole Foods Market	✓		✓
Starbucks	✓		✓
Family Dollar			✓
Petco			✓
Target			✓
TJX (TJ Maxx, Marshalls, etc.)			✓
Walgreens			✓
Walmart			✓

TABLE 1. SELECT COMPANIES AND ASSOCIATED RECEIPT PRACTICES

*Trader Joe's has used BPS in the past, but within 2018 it will roll out phenol-free receipt paper in its stores.
Apple, GNC, and In-N-Out have not confirmed use of phenol or non-phenol receipts at this time.
This is a selection of retailers, and not an exhaustive list.

HOW TO TAKE ACTION

Green America's "Skip the Slip" campaign is one of the first initiatives in the United States to analyze environmental and human health impacts of receipt usage and waste, propose financially-savvy solutions for businesses to end the use of paper receipts, and engage consumer action.



Skip the Slip takes on a small nuisance with a huge footprint by addressing paper receipts. We want to see transactions which prioritize the environment, human health, customer security, and transaction efficiency.

Our goal is to reduce the enormous use of paper, energy, and water for receipts by urging major companies to offer paperless receipt options. For customers that do request paper receipts, it is necessary that recycled content, recyclable, non-toxic paper options be provided to them.

The following pages are concrete steps you can take to address paper receipts.

FOR CONSUMERS



- At the start of a transaction, let the cashier know you don't want a paper receipt, and feel free to remind them towards the end. If you wait until the end of the transaction, depending on the system used at the store, a slip might be printed even though you don't want one.

- Request digital receipts, even for gift receipts. Simply forward the digital copy to your loved one after you've given them their gift in case they need to return or exchange it.

- Create a special folder for emailed receipts or use a separate email address for digital receipts and marketing emails to keep it from clogging up your regular email.

- Urge companies you patronize to adopt digital receipt options and non-toxic receipt paper. You can advocate in person or ask via social media or email. A number of retailers also have comment boxes located in-store.

- Fold receipt with the printed side facing in if you must take a receipt with BPA or BPS coating. This lessens exposure, since the back of thermal paper is often not coated.

- Be mindful of the products you purchase since everything we buy has an impact on the planet. And the fewer purchases we make, the fewer receipts to reject.

- Sign Green America's pledge to Skip the Slip, letting companies know you want better options for your receipts. Find it at GreenAmerica.org/skip-the-slip.

- If you get a long receipt, you can tweet a photo of it and tag the company that provided it to let them know you want them to #SkiptheSlip next time.

FOR EMPLOYEES



- Ask customers “Do you want your receipt?" rather than automatically printing it.
- Confirm with your employer if the receipt paper used in your workplace has BPA or BPS coating, or contact the company that provides your workplace with receipt paper. If it is phenol-coated, encourage your company to switch to a non-phenol options instead for any print receipts.
- Encourage the store manager to make paper receipts optional.
- Share information on environmental and human health impacts of paper receipts with other employees.
- Wear nitrile gloves to decrease BPA or BPS exposure if your job requires contact with thermal paper receipts.
- Wash your hands after touching receipts using soap and water instead of alcohol-based hand sanitizers or lotion (which increase BPA/BPS absorption).
- Check out our resource on skipping the slip in the workplace to learn more.

FOR BUSINESSES



- Look into other options, including digital receipts and phenol-free recyclable paper. Green America is glad to assist in strategizing the best paperless receipt practice for your company, free of charge. Please contact us to learn more.

- Adopt better receipt practices for the environment and the health of their employees and customers.

- Review the examples above to learn about the different technologies and solutions that exist and the companies that provide it.

- If you offer digital receipts, you can promote them to your customers so digital becomes a social norm. When asking if a customer needs a receipt during check-out, let them know how many customers have not taken a paper receipt or include a stat about how many trees are saved by their not taking a paper receipt.

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