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Tips to conserve energy,
save dollars, and

Energize Your Wardrobe



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Energize Your Wardrobe

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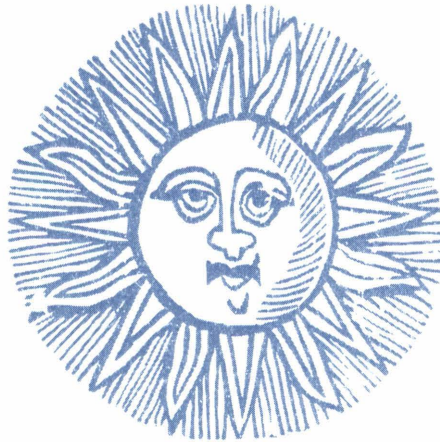
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Clothing and the Energy Crisis



Today, the world faces an energy shortage that affects every segment of our society. America can no longer afford or allow the luxury of wasting energy.

Energy demand in the United States has recently been growing faster than the nation's supply (an annual growth in consumption of nearly five percent, compared with a supply growth of three percent).

In the years ahead, energy shortages are expected to change life-styles throughout the country. The energy crisis may well mean inconvenience and discomfort for consumers. Certain living patterns individuals have become accustomed to will require change.

Conservation of energy in all forms is essential. Increased cost of all energy sources, and the variable supply-demand situation are factors families must consider in making decisions concerning use of energy. New attitudes and life-styles will be necessary to conserve energy and eliminate waste of resources.

So far it looks as though there will be no clothing or textile shortages, even though some seventy percent of our fabrics are made from petroleum derivatives. However, you can't afford to ignore the seriousness of the energy crisis. The textile and fashion industries have begun to respond and to take the energy crisis to heart.

The energy shortage threatens to change the way you dress. It opens up a whole new vista of managing your wardrobe to save energy and money without sacrificing fashion.

Proper clothing selection, wardrobe maintenance, and personal grooming can contribute to energy conservation and to saving dollars in many ways.



Clothing and Physical Comfort

No matter what the environment temperature is, the body has one basic goal... to maintain a constant internal temperature 37°C (98.6°F) essential for the well-being of vital organs. The skin averages about 33°C (91.5°F).

The body is constantly producing heat through the burning of food (metabolism) and must continually lose heat to maintain a necessary constant temperature within itself. One of the most important by-products of metabolism is water. The body loses about $1\frac{1}{2}$ pints a day through the continued drying process of the skin (this does not include perspiration).

Thermal comfort of the body is related to heat exchange between the body and the environment. The body mechanisms operate to maintain the internal organs at constant temperature. This is achieved when the body produces heat at the same rate that heat is lost from the body.

Heat loss occurs through four main channels.

Radiation — transfer of heat by means of electromagnetic waves. The areas of the body which are exposed to the environment lose the most heat by radiation. Body heat can be increased by radiation from the sun.

Convection — transfer of heat through the actual flow or spreading of warm molecules from a warm object to a cool one. Movement of the body or limbs of the body produces the loss of heat by convection.

Conduction — transfer of heat through a medium without actual physical transfer of material. Heat is transferred by conduction when a warm body is placed on a cold chair.

Evaporation — transfer of heat from the body when environmental temperature is greater than skin temperature. Perspiration is transformed into vapor at the skin surface when the body is overheated.

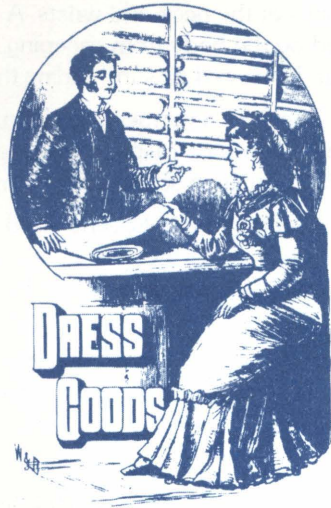
Clothing plays an important role in the heat transfer between the body and the environment. That is, it reduces the amount of heat lost from the body to the atmosphere, and decreases the amount of heat absorbed by the body from the environment.

Textile fibers and entrapped air, both poor conductors of heat, are good insulators. Since still air is the poorest conductor of heat, the insulating value of any garment or fabric depends upon its capacity to entrap air. The insulating value is primarily due not to the fabric itself, but to the provision within the fabric of air spaces in which air movement is almost nil. Remember, thickness is warmth. It is the thickness of insulation used that counts, not the fiber it is made of or the weight of the fabric.

Fabrics can break up convection by blocking air currents with “dead” air spaces. This can be accomplished in fabric structure by crimping, texturizing, knitting, and weaving. Also, it can be achieved in laying of fabrics by creating a “dead” air space between layers. Thus, two layers are better than one thick layer.

Another factor to be taken into account in estimating the insulating value of clothing is the resistance of the exterior fabric surface to the penetration of air movement. Very tightly woven fabric and weather-proof fabrics are relatively impermeable to air currents.

Clothing Selection



Fashion dressing and energy conservation may seem like distant concepts to you. But, with the energy crunch — and the limits in wintertime heating and summertime air-conditioning it portends — wardrobe planners need to consider function as well as fashion when selecting clothes.

The clothes you wear have an important effect on your personal comfort as well as your pocketbook. Learning to select the proper type of apparel for the existing environmental conditions instead of changing the environment by means of energy consuming heat or air-conditioning can save you money and keep you comfortable too.

Remember, heat exchange between the body and the environment determines body comfort. Proper clothing helps the body to keep its comfortable temperature in the winter by preventing heat loss and in the summer by speeding it up.

Make your clothes work for you to meet your body needs in the various environments in which you work and live. Extend your clothes through the seasons with efficient wardrobe management.

A good wardrobe planner needs to consider many things in selecting apparel. Each of these concepts has a direct effect on the comfort you receive from your clothing.

Color Light-colored clothing reflects radiant heat and helps you stay cooler while dark colors absorb the sun's rays and make you feel warm. Not only do white and cool hues, such as light green and light blue, make you feel cooler, but they make you think cooler, too. Warm hues, such as red, orange, and yellow, work in the opposite direction and give you a feeling of warmth.

Style The style of a garment can be an important comfort factor. Still air acts as an insulator, keeping body heat in and cold air out. To dress warmly, garment

styles should be selected that keep air spaces near the body with close fitting openings at the neck and wrists. A waist that is close fitting also prevents the air heated by the body from escaping. To dress coolly, select loose, open-styles that permit the heated air surrounding the body to escape.

Fit The fit of a garment can help you maintain proper body temperature. Tight clothing, contrary to popular belief, does not keep you warmer, but actually inhibits circulation so the body will not warm itself as efficiently.

Clothes that are not overly fitted make good warm-weather selections because they let air get to the skin to evaporate perspiration as it accumulates. Larger neck, arm, and leg openings help heat to escape through this process, also.

Even in cold weather, if clothes fit too tightly there is no room for air to be trapped between the clothes and your skin to serve as an insulator. Even though in this case, the openings need to be close fitting, the garment itself needs to be loose enough to provide air spaces next to the body.

Fiber Surprisingly, no one fiber is warmer than another. What is important is the thickness of the fabric. You have heard of the expression “warmth without weight.” This refers to fibers that weigh less and are good at retaining heat. Wool and silk weigh less than linen or cotton. Synthetics are generally lighter in weight than natural fibers. Polyester is an exception as it is heavier than cotton.

Your body gives off moisture. Fibers that can absorb this moisture and allow perspiration to evaporate from the skin are more comfortable to wear. The natural fibers, such as cotton, linen, silk, and wool, do a very good job of absorbing moisture from the skin. Man-made fibers, with the exception of rayon, do not.

Structure Fibers are neither warm nor cool by themselves. Yarn and fabric structure largely determine whether heat is given off or retained. Synthetics can be good insulators if they are shaped or crimped to trap air. Acrylic fibers are made to resemble wool, and when shaped to have bulk they can be quite warm.

Fabric structure also can offer comfort in garments. For example, a bulky yarn used in a knitted structure contains dead air spaces which make the garment quite warm.

Pile fabrics, such as corduroy and fleece, have an extra set of yarns built into their surface to form the pile. The pile traps air, making these fabrics warm. Fabrics can be quilted, laminated, or bonded together to increase their insulating properties. The thicker the structure the warmer the fabric will be. Double-woven and double knit fabrics are also warm as air is trapped between the layers in both of these fabric structures.

Down and synthetic fiberfill insulated fabric, popular for winter jackets, parkas, and vests, are known for their ability to form layers of insulating air in fabric construction and their ability to keep you warm.

Loosely woven fabric, such as gauze, voile, or open constructed knits, are excellent choices for warm weather clothes because they let air in and heat out.

Finish The finish as well as the structure of a fabric has much to do with its ability to allow air movement and moisture evaporation.

Some fabrics have finishes which make them less absorbent. These should be avoided for a hot weather wardrobe. Stain and wrinkle resistant finishes fall into this category. They may be easier to care for or look nicer, but they do keep you warmer. A napped or brushed finish on a fabric to give it a fuzzy surface increases the number of free ends capable of trapping warm air, thus they feel warmer on the skin.

Layering The layered look of today's fashion provides a good opportunity to maintain a comfortable level of body heat.

By wearing shirts, blouses, sweaters, and jackets in different combinations, it is very easy to maintain the amount of clothing worn for the surrounding temperature by adding or subtracting different layers.

Clothing acts by trapping a layer of air next to the skin, greatly reducing loss of body heat. With the addition of each layer of clothing, more air is trapped, and the body feels warmer.

It's important to understand that several layers of light-weight clothing will keep you warmer than one heavy layer because air is trapped between the light-weight layers. This air is heated by the body and acts as an insulator.

Innerwear When the temperature dips, you'll welcome cozy underwear and sleepwear which can contribute greatly to your comfort. If you are really cold you might wish to wear insulated or knit underwear. Wearing knee-length socks rather than ankle hose will add 6/10 degree of warmth. Even panty-hose adds one degree of warmth, or more if they are textured as this type will trap more air. An undershirt will add 1/2 degree of warmth.

When the temperature soars upward, you'll need to switch to lightweight, easy-fitting underpinnings and nightwear.

Accessories When thinking about accessories, remember that additional items are going to make you warm. Ties, scarves, belts, and gloves can help provide more layers of warmth to the body. A belt at the waist helps trap air at that area of the body.

You can apply the natural fiber rule to accessories. Cotton scarves and socks are cooler than those of man-made fibers.

Energy Sparing Clothes



The John P. Pierce Foundation in New Haven, Connecticut is one of the country's most respected thermal environmental research centers. Their studies show that women are more thermally sensitive to cold than men and more likely to feel cooler sooner.

The body tries to keep the heat in the trunk and head where vital organs are, so less blood is supplied to extremities. Thus, cold hands and feet. Studies also show if your head is covered, you feel warmer.

Your natural thermal balance mechanism will work better if you adjust to different temperatures before you feel uncomfortable. Dress for the temperature rather than depending on heating and cooling systems which are high energy users. Proper clothing helps the body to keep its comfortable temperature in the winter by preventing heat loss and in the summer by speeding it up.

These guidelines will help you energize your wardrobe.

Summerize the Wardrobe

Dressing for hot weather involves more than simply wearing less clothes. To keep cool, body heat must be lost by the evaporation of perspiration. You can deep-freeze your wardrobe and cool-down when you:

- Wear white and light-colored garments which actually reflect the sun's radiant heat.
- Select cool hues, such as light green or blue, which make you think cool as well as feel cooler.
- Wear loose fitting styles with larger openings at neck, arms, and legs to allow body heat to escape and air to get to your skin.

- Select absorbent fabrics such as cotton, linen, and blends of natural and man-made fibers which will aid in the removal of moisture from the skin surface without becoming clingy and clammy.
- Wear undergarments which allow the perspiration to evaporate from the surface of the skin. Evaporation is more efficient from the skin than from wet apparel.
- Choose lightweight and open weave fabrics such as gauze, voile, eyelet, and lacey knits for hot weather as they allow air in and body heat out.
- Reduce the layers of clothing worn for warm weather dressing.
- Choose summer rainwear made of a water repellent rather than a waterproof fabric, such as vinyl or plastic, that does not allow the fabric to “breathe.”
- Keep jewelry to a minimum. Select lightweight, summer jewelry and avoid ornate or metal ones which can retain heat.
- Wear sandals and open-type shoes which allow heat to escape and perspiration to evaporate.
- Select lightweight and self-fabric belts as leather and plastic ones cause moisture to accumulate.
- Invest in protective headgear such as a brimmed straw hat as too much direct sunlight on the head can cause overheating.
- Select cotton or cotton-blend scarves, ties, and socks, rather than one-hundred percent man-made ones as they are cooler.
- Women — wear skirts rather than pants, and panty hose with a cotton crotch since they are cooler in hot weather.
- Men — reduce the layers of clothing worn. Omit the T-shirt, wear short sleeve shirt and an unlined, lightweight suit jacket.

Winterize the Wardrobe

According to an expert at the U.S. Army Laboratories in Natick, Massachusetts, there are three golden rules to follow for keeping warm.

First, it is the thickness of the garment, not the weight that determines how warm a garment will keep its wearer. Second, it is important to keep clothing clean and dry, and to avoid excessive sweating, if possible. The third rule is to wear loose clothing in layers as this method will trap warm air against the body.

You can anti-freeze your wardrobe and warm-up when you:

- Wear darker colored garments as they absorb the sun’s rays and make you feel warmer.
- Select warm hues such as red, orange, and brown, which make you think warm as well as feel warm.
- Choose close-to-body styles with opening at the neck, wrist, and waist close-fitting, as this prevents the air heated by your body from escaping.

- Judge the warmth potential of a fabric according to bulk and feel. A fabric that is slick and cool to the touch won't be as warm as one that feels soft and fluffy, regardless of fiber content.
- Choose natural fibers, such as wool, cotton, and down, which are better insulators of air and better absorbers of moisture than man-made fibers because of weave, fiber structure, and in the case of down, loft.
- Wear thermal underwear or regular knit underwear to insulate the body. The use of T-shirts under dress shirts add extra warmth. For maximum retention of body heat, tuck the T-shirt into your underwear. Long johns and elbow and knee warmers help hold body heat.
- Take advantage of fashion's layered look. The more layers the more air is trapped and the warmer you'll be up to a point. Too much can, by compression, eliminate all the warmth providing air. Layering allows you to peel off extraneous clothing when overheated.
- Warm up legs with timely fashion looks in anklets, knee-high socks, leg-warmers, panty hose, and bodywear.
- Wear closed and heavier footwear. In shoes, crepe or rubber soles are warmest. Shoes with higher heels or thicker soles keep feet off the ground and make them warmer. Fleece-lined ankle or knee boots retain more heat than regular shoes.
- Use sweaters as energy savers. Popular shawl collar and turtleneck styles give added warmth. Sweater coats, ponchos, and shawls are other energy-wise fashions.
- Keep hands warm when outdoors. Wear fleece-lined, fur-lined, wool gloves or mittens. Mittens will keep you warmer than gloves because there is more room to trap air between fingers.
- Wear a hat, hood, or scarf around the head as about ninety percent of the body's heat loss is at the head. If covered, excess heat can no longer escape and therefore it goes to other body parts such as hands or feet.
- Get extra warmth from cotton knit or flannel pajamas and nightgowns. Ski-type pajamas with cuffs at wrists and ankles are the coziest type to wear.
- Select long robes, caftans, or jumpsuits for lounging at home. Velour, heavier terry cloth, wool, wool blends, bulky acrylic, pile, and quilted fabrics are warmest in the winter.
- Insulate feet from cold floors by wearing thick socks and loose-fitting slippers or quilted goose down booties.
- Women — replace pants for skirt or dress as they are able to trap heat better because of the smaller leg opening.
- Men — wear a sleeveless sweater or vest under the jacket to provide another layer of warmth. Ties in either wool tweed or knit give added warmth.

Clothing and Special Needs



People who are in good health can cope fairly well with the range of temperature they must face. However, there are some persons who have special problems, and need help in order to adapt to changes in their environment.

Infants Babies can feel cold and heat faster than adults because their body mass is so small and their internal thermostat not fully developed. They rely on adults to dress them properly in the various environmental temperatures they will encounter.

Children The younger set needs guidance from their elders in order to make their own choices of proper clothing for their environmental needs. A good general rule for the child is not to wear more clothing than is necessary for warmth. The weight of clothing has a definite relation to comfort and good posture.

Elderly They suffer more than their juniors since they are generally less active. Also, their temperature control mechanisms no longer function at peaks.

Handicapped People who are immobile because of their handicaps are often cold. A poncho which is easy to slip over the head provides warmth. Lap robes, capelets, and shawls can serve to help control body temperature for those with limited mobility.

Cardiac and Circulatory The body's automatic response mechanism to cold causes trouble for people with these problems. It is important that they dress warm. Consider investing in zoned heating so that the temperature of at least one room can be maintained above 20°C (68°F).

Care of Clothing



By law, your clothes must be identified for fiber content and have permanent care labels attached to them which give instructions for proper care. For best results, read and follow care labeling faithfully to prolong the life of your clothing.

In home laundering, energy is required for heating water, washing, and drying. Proper clothing selection can reduce energy consumption for clothing care. Select clothing that does not require separate or special care in laundering. Keep clothing clean to obtain maximum warmth. Dirt and moisture in air spaces decrease their effectiveness as insulators.

There are many ways you can save dollars — and conserve energy at the same time as you care for your clothes. The best way to conserve water and energy is through correct use of laundry appliances and the use of good laundry practices. If clothes have to be laundered twice because they aren't clean, water and energy have been wasted.

Read your appliance manuals for special information which may help you conserve energy. Remember, smart use of your laundry appliances can shrink energy consumption and save you money.

- Avoid wasting hot water while laundering. Use warm and cool water settings as much as possible to cut down on the energy needed to heat water. Use warm water for lightly soiled items to help save hot water, when needed, for heavily soiled loads.
- Use a cold water rinse for every washload as it is just as effective as a warm one.
- Use wash time and cycle suitable for the type of load. Shorter wash time can be used for lightly soiled loads.
- Use the water level control on your washer for partial loads, if possible. Otherwise, save clothes of similar fabrics until you have a full load.

- Take advantage of special features on your washer that can save you money. For example, soak cycles help to remove stubborn stains in one wash cycle.
- Suds-savers allow you to re-use hot water for several loads of heavily soiled clothes.
- Follow detergent instructions carefully. Oversudsing makes your washing machine motor work harder than it needs to.
- Try line drying, in or out-of-doors, to conserve gas and electric dryer energy.
- Vent the dryer as clothes will dry faster and make certain the vent stays free of lint.
- Clean the lint filter on your washer and dryer after each load to keep your machines running efficiently.
- Don't overload your dryer or overdry your clothes. Over-dried clothes feel harsh and waste energy. Follow the instruction manual for proper settings and drying times.
- Remove all garments from the dryer as soon as the cycle is finished. It will help eliminate much of your ironing.
- Iron large amounts of clothes at a time to avoid heating up an iron several times a day. First, iron fabrics that require lower temperatures, and work up to those requiring higher heat. An iron heats faster than it cools, so less energy is needed to go from low to high, than in reverse.
- Use the lowest temperature on the iron that will do the job well. If you are called away from your ironing, turn the iron off and unplug it.

Personal Care



Other activities that consume energy for hot water and electricity are bathing and grooming. In personal care, the major consumption of energy is for heating water. The National Bureau of Standards reports that bathing accounts for forty-two percent of the daily use of hot water in the home. Also, the widespread popularity of personal care products which require electricity or hot water increases the demand for energy.

A few suggestions for conserving water and electricity in your personal grooming practices.

- Take showers. A shower requires less water 19 to 57 liters (5-15 gallons) then does a bath, 114-190 liters (30-50 gallons). One way to reduce shower water use is to wet down, turn off the water, lather up, turn on water, and rinse off.
- Limit the number of showers or baths you take. Substitute a “sponge” bath for a daily shower or bath occasionally.
- Put a flow restrictor in your shower head to cut down on use of water.
- Avoid letting the water run while you brush teeth, shave face, or wash hands.
- Limit the use of personal grooming equipment which requires electricity.
- Check for faulty wiring and controls on personal care equipment, and keep equipment clean.
- Turn equipment off when not in use, disconnect and store properly.
- Keep light fixtures, exhaust fans, and ventilators clean in the bathroom.
- Check to see how much electricity will be used and learn to estimate annual cost of any personal care product you anticipate purchasing.

Designed by Judith Mazziotti

